HP ProLiant DL140 Generation 3 Server

Software Configuration User Guide

Part number: 416132-001

First edition: October 2006

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System BIOS configuration

System BIOS overview

Basic Input/Output System or BIOS is a set of programs permanently stored in an EEPROM chipset (U64) located on the system board. These programs serve as an interface between the server's hardware components and its operating system. Your ProLiant server features the *Phoenix*BIOS software—a ROM BIOS-based diagnostic tool that monitors system activity and performs constant hardware testing to ensure proper system operation.

*Phoenix*BIOS software

The *Phoenix*BIOS software serves three functions.

- Configure the system settings via the *Phoenix*BIOS Setup Utility

  Using the Setup program, you can install, configure, and optimize the embedded hardware devices on your system (clock, memory, disk drives, etc.).
- Initialize hardware at boot via POST (Power On Self-Test) routines

  At power-on or reset, the software performs POST routines to test system resources and load the operating system.
- Perform run-time routines

  Using the software, perform basic hardware routines that can be called from DOS and Windows applications.

*Phoenix*BIOS Setup Utility

NOTE: For ease of reading, *Phoenix*BIOS Setup Utility will be simply referred to as "Setup" or "Setup Utility" in this guide. Also, the screenshots used in this guide display various Setup menu screens with default system values identified. These values may not be the same as those in your server.

*Phoenix*BIOS Setup Utility is a hardware configuration program built into your system's Basic Input/Output System (BIOS). Since most systems are already properly configured and optimized, there is normally no need to run this utility.

You will need to run this utility under the following conditions:

- When changing the system configuration including:
  - Setting the system time and date
  - Configuring the hard drives
  - Specifying the boot device sequence
  - Installing PCI expansion boards
  - Upgrading the system BIOS
  - Configuring the power management modes
  - Setting up system passwords or making other changes to the security setup
- When a configuration error is detected by the system and you are prompted ("Run Setup" message) to make changes to the BIOS settings.

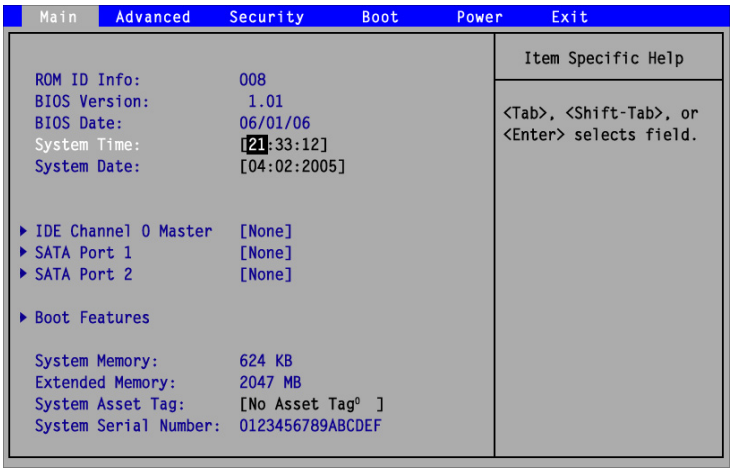
NOTE: If you repeatedly receive "Run Setup" messages, the battery (BT1) located on the system board may be defective. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.

The Setup Utility loads the configuration values in a battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM, which allows configuration data to be retained when power is turned off. The values take effect when the system is booted. POST uses these values to configure the hardware. If the values and the actual hardware do not agree, POST generates an error message. You must run this utility to change the BIOS settings from the default or current configuration.

Accessing the Setup Utility

1. Turn on the monitor and the server.
   If the server is already turned on, save your data and exit all open applications, then restart the server.
2. During POST, press **F10**.
   If you fail to press **F10** before POST is completed, you will need to restart the server.
   The first page to be displayed will be the Main menu showing the Setup Utility's menu bar. Use the left (←) and right (→) arrow keys to move between selections on the menu bar.

Figure 1 Setup Utility's Main menu



Navigating through the Setup Utility

Use the keys listed in the legend bar on the bottom of the Setup screen to work your way through the various menu and submenu screens of the Setup Utility.

Table 1 Setup Utility's navigation keys

Key	Function
← and →	To move between selections on the menu bar.
↑ and ↓	To move the cursor to the field you want. The currently selected field will be highlighted. The right side of each menu screen displays a field help panel—Item Specific Help panel. This panel displays the help text for the currently selected field. It updates as you move the cursor to each field.
PgUp and PgDn	To move the cursor to the next or previous page of a multiple page menu.
Home	To move the cursor to the first page of a multiple page menu.
End	To move the cursor to the last page of a multiple page menu.
+ and -	To select a value for the currently selected field (only if it is user-configurable). Press the (+) or (-) keys repeatedly to display each possible entry, or the **Enter** key to choose from a pop-up menu. A parameter that is enclosed in square brackets [ ] is user-configurable. Grayed-out parameters are not user-configurable for one of the following reasons: • The field value is auto-configured or auto-detected. • The field value is informational only. • The field is password-protected.
Enter	To select a field value or display a submenu screen.
►	Indicates a submenu field. To view a submenu screen, use the ↑ and ↓ keys to move the cursor to the submenu you want, then press **Enter**.
Esc	If you press this key: • On one of the primary menu screens, the Exit menu displays. • On a submenu screen, the previous screen displays. • When you are making selections from a pop-up menu, closes the pop-up without making a selection.

Table 1 Setup Utility's navigation keys

Key	Function
F1 or Alt-H	To bring up the General Help window. The General Help window describes other Setup navigation keys that are not displayed on the legend bar.
F9	Press to load default system values.
F10	Press to save changes and close the Setup Utility.

Setup Utility primary menus

The Setup Utility's menu bar displays the six primary menu selections. For detailed information and related screenshots of these Setup menus, refer to the succeeding sections.

NOTE: In the table following each of the menu screenshots, options in **boldface** are the system default settings.

Main menu

Figure 2 Setup Main menu

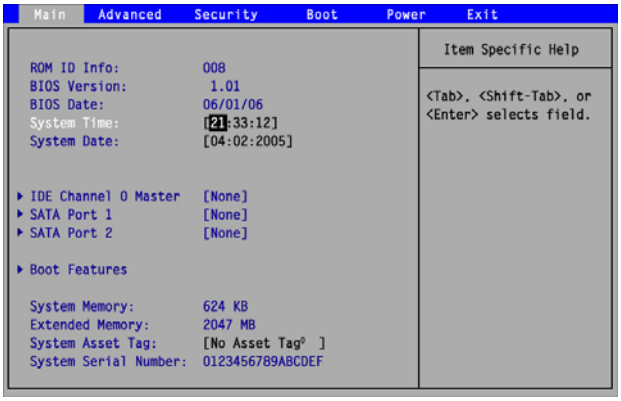


Table 2 Main menu fields

Field	Description
ROM ID Info	System ROM identification number
BIOS Version	BIOS setup utility version
BIOS Date	Date when the Setup utility was created
System Time	Adjust the system time.
System Date	Adjust the system date.
IDE Channel 0 Master	Displays the current configuration of the IDE device connected to the master port of the primary IDE channel. Press **Enter** to access the related submenu.
SATA Port 1/2	Displays the current configuration of the hard drive connected to the SATA ports. Press **Enter** to access the related submenu.
Boot Features	Set which options to run during system bootup. Press **Enter** to access the related submenu.
System Memory	Amount of conventional memory detected during POST
Extended Memory	Amount of extended memory detected during POST
System Asset Tag	Enter the server asset tag and serial number. These information are printed on the serial label pull tab located on the front panel.
System Serial Number	

Note: If you install additional memory, the system automatically adjusts the System/Extended Memory fields to reflect the new memory size.

IDE Channel 0 Master/SATA Port 1/SATA Port 2 submenu

Figure 3 IDE Channel 0 Master/SATA Port 1/SATA Port 2 submenu

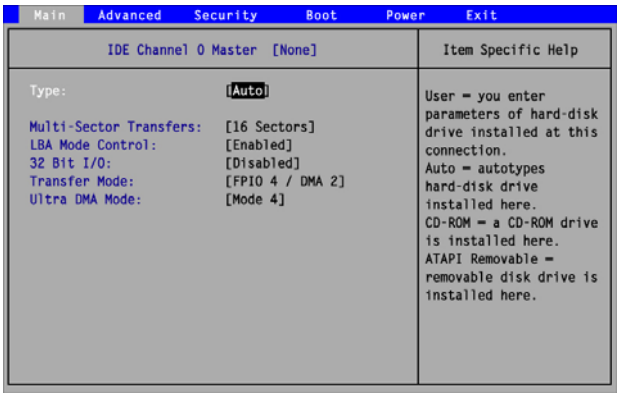


Table 3 IDE Channel 0 Master/SATA Port 1/SATA Port 2 submenu fields

Field	Description	Options
Type	Select the type of drive connected to the related port. If you select **None**, the related port will be disabled. Selecting **User** will allow you to manually edit the device information, while **Auto** will enable the device to provide its own information.	None User **Auto** IDE Removable CD-ROM ATAPI Removable
Multi-Sector Transfer	Determine the number of sectors transferred per block.	**Disabled** Standard 2/4/8/16 sectors
LBA Mode Control	Enabling this function allows the use of the Logical Block Addressing (LBA) scheme, as opposed to the Cylinders-Heads-Sectors (CHS) design, in specifying data blocks.	Enabled **Disabled**
32-bit I/O	Enables 32-bit communication between the processor and the related device.	Enabled **Disabled**
Transfer Mode	Select the method for transferring the data between the related device and the system memory. Setup only lists the options supported by the drive and platform.	**Standard** Fast PIO 1/2/3/4
Ultra DMA Mode	Enabling this function allows the related device to employ an Ultra Direct Memory Access (UDMA) mode in transferring data. If enabled, it will display the UDMA mode used by the device.	Enabled **Disabled** Mode 1/2/3/4/5

Boot Features submenu

Figure 4 Boot Feature submenu

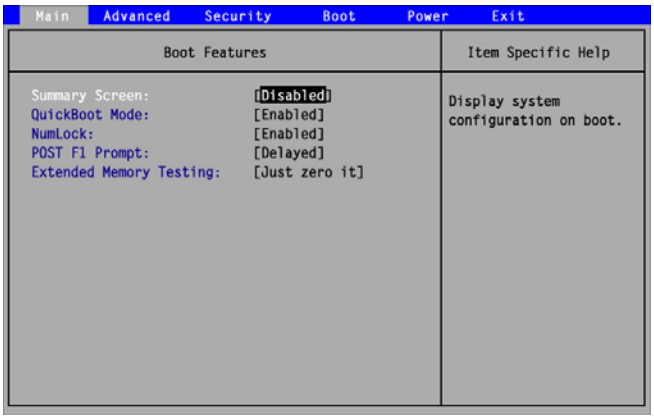


Table 4 Boot Features submenu fields

Field	Description	Options
Summary Screen	Choose whether to display the boot-time diagnostic screen during POST. For more information on what this screen display, go to page 20.	Enabled **Disabled**
QuickBoot Mode	Enabling this mode allows the system to skip certain POST items during bootup. This will decrease the time needed to boot the system.	**Enabled** Disabled
NumLock	Select the NumLock behavior during bootup.	**Enabled** Disabled
POST F1 Prompt	Select when to display the F1 prompt or choose to disable the F1 prompt if any abnormal situation occurs during BIOS POST.	Enabled Disabled **Delayed**
Extended Memory Testing	Select the scope of test to include in the extended memory testing (above 1 MB).	Normal **Just zero it** None

Advanced menu

Figure 5 Setup Advanced menu

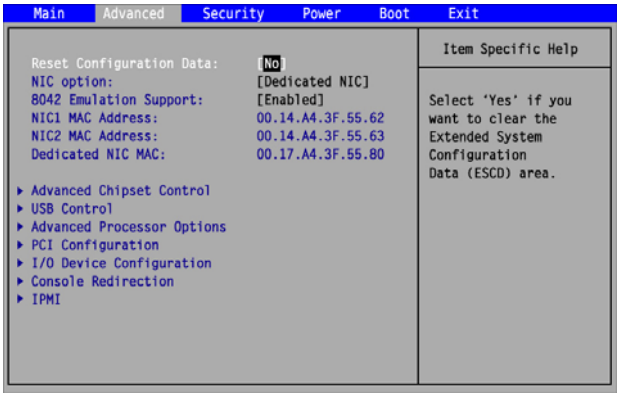


Table 5 Advanced menu fields

Field	Description	Options
Reset Configuration Data	Select whether to erase data in the section of memory for ESCD (Extended System Configuration Data) which stores the configuration settings for non-PnP plug-in devices.	Yes **No**
NIC Option	Select which LAN port to use for console redirection.	**Dedicated NIC** Side-band NIC
8042 Emulation Support	Select whether to enable emulation support for the 8042 keyboard controller. **Note:** Users who intend to install the Red Hat Enterprise Linux 4, x64 Edition or the SuSE Linux Enterprise Server 10, x64 Edition must set this field to **Disabled**.	**Enabled** Disabled
NIC 1/2 MAC Address	Displays the Media Access Control (MAC) address for the LAN ports 1 and 2.	
Dedicated NIC MAC	Displays the MAC address for the dedicated LAN port.	
Advanced Chipset Control	Displays the settings related to the system chipset functions. Press **Enter** to access the related submenu.	
USB Control	Displays the settings related to USB device(s) functions. Press **Enter** to access the related submenu.	
Advanced Processor Options	Displays the settings related to the processor. Press **Enter** to access the related submenu.	
PCI Configuration	Displays the settings related to the onboard Ethernet chipset and the expansion slots. Press **Enter** to access the related submenu.	
I/O Device Configuration	Displays the settings related to the serial port. Press **Enter** to access the related submenu.	
Console Redirection	Displays console redirection-related settings. Press **Enter** to access the related submenu.	
IPMI	Displays server management-related settings. Press **Enter** to access the related submenu.	

Advanced Chipset Control submenu

Figure 6 Advanced Chipset Control submenu

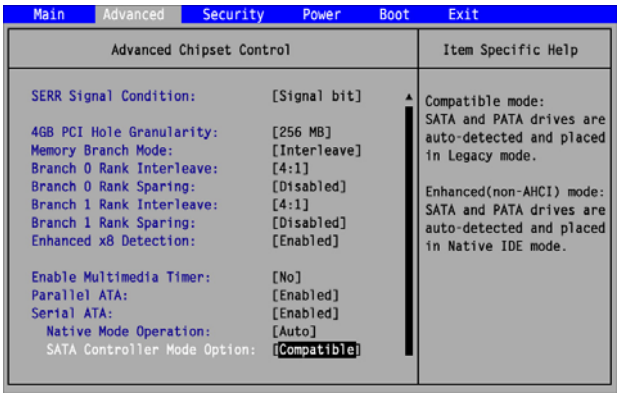


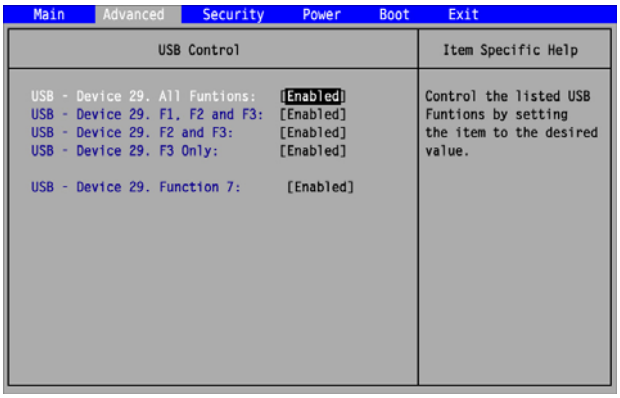
Table 6 Advanced Chipset Control submenu fields

Field	Description	Options
SERR Signal Condition	Select the ECC error condition that will prompt a SERR#.	None **Single Bit** Multiple Bit Both
4 GB PCI Hole Granularity	Select the granularity of PCI hole for PCI resource.	128 MB **256 MB** 1.0 GB 2.0 GB
Memory Branch Mode	Select the type of memory branch mode to employ.	Sequential **Interleave** Mirror Single Channel 0
Branch 0/1 Rank Interleave	If the Memory Branch Mode field is set as **Interleave**, select the interleave mode to employ for the selected memory branch.	1:1 2:1 **4:1**
Branch 0/1 Rank Sparing	Select whether to enable sparing for the selected memory branch.	Enabled **Disabled**
Enhanced x8 Detection	Select whether to enable the enhanced x8 detection function.	**Enabled** Disabled
Enable Multimedia Timer	Select whether to enable the system multimedia timer.	Yes **No**
Parallel ATA	Select whether to enable support for PATA devices.	**Enabled** Disabled
Serial ATA	Select whether to enable support for SATA devices. If enabled, set options for the Native Mode and SATA Controller Mode fields.	**Enabled** Disabled
Native Mode Operation	Select the native mode for the SATA function.	**Auto** Serial ATA
SATA Controller Mode Option	Select whether to set SATA/PATA devices to legacy (Compatible) or native (Enhanced) mode.	**Compatible** Enhanced

USB Control submenu

The USB Control submenu allows users to select which functions to enable for available USB devices.

Figure 7 USB Control submenu


Main
Advanced
Security
Power
Boot
Exit
USB Control
Item Specific Help
USB - Device 29. All Funtions: [Enabled]
USB - Device 29. F1, F2 and F3: [Enabled]
USB - Device 29. F2 and F3: [Enabled]
USB - Device 29. F3 Only: [Enabled]
USB - Device 29. Function 7: [Enabled]
Control the listed USB Funtions by setting the item to the desired value.

Advanced Processor Options submenu

Figure 8 Advanced Processor Options submenu

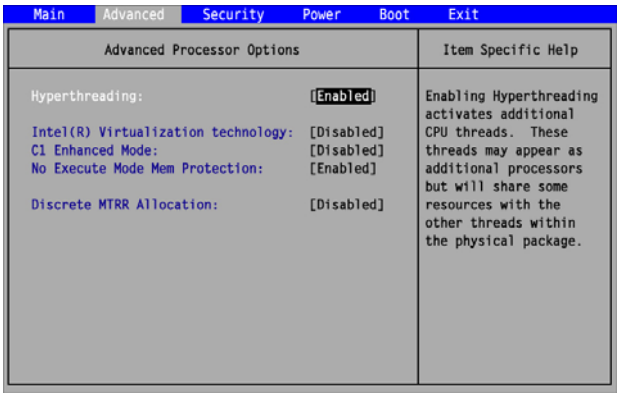

Main
Advanced
Security
Power
Boot
Exit
Advanced Processor Options
Item Specific Help
Hyperthreading: [Enabled]
Intel(R) Virtualization technology: [Disabled]
C1 Enhanced Mode: [Disabled]
No Execute Mode Mem Protection: [Enabled]
Discrete MTRR Allocation: [Disabled]
Enabling Hyperthreading activates additional CPU threads. These threads may appear as additional processors but will share some resources with the other threads within the physical package.

Table 7 Advanced Processor Options submenu fields

Field	Description	Options
Hyperthreading	Select whether to enable the Intel Hyper-Threading (HT) Technology function. HT enables the host operating system to view a single physical processor to appear as two *logical* processors. This can boost performance in OS and applications that are HT-compliant. **Note:** The Dual-Core Intel Xeon processor of your ProLiant server supports the Hyper-Threading function.	**Enabled** Disabled
Thermal Management 2	Select whether to enable the processor power management mode. If enabled, the processor frequency and voltage will be reduced if the processor is overheated.	**Enabled** Disabled
Intel Virtualization Technology	Select whether to enable the Intel Virtualization Technology function. VT allows a single platform to run multiple operating systems in independent partitions.	Enabled **Disabled**
C1 Enhanced Mode	Select whether to enable the C1 Enhanced mode for the processor. If enabled, all logical processors in a physical processor will run in a C1 state.	**Enabled** Disabled
No Execute Mode Mem Protection	Select whether to enable support for the No eXecute (NX) bit function. The NX function allows the processor to divide the system memory into areas for storage of processor instructions or for storage of data. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.	**Enabled** Disabled

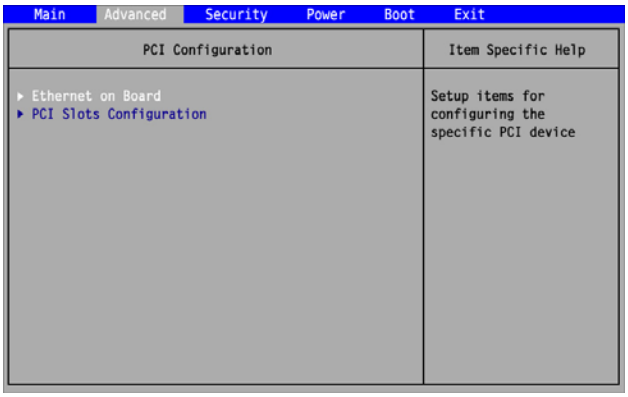
Table 7 Advanced Processor Options submenu fields

Field	Description	Options
Discrete MTRR Allocation	If enabled, Memory Type Range Registers (MTRRs) are configured as distinct, separate units with no overlapping. This will allow users to achieve better graphic effects when using a Linux graphic driver that requires a write-combining configuration with 4GB or more memory.	Enabled **Disabled**

PCI Configuration submenu

The PCI Configuration submenu displays options to view settings related to the onboard Ethernet controllers and the expansion slots.

Figure 9 PCI Configuration submenu



Ethernet on Board submenu

Figure 10 Ethernet on Board submenu

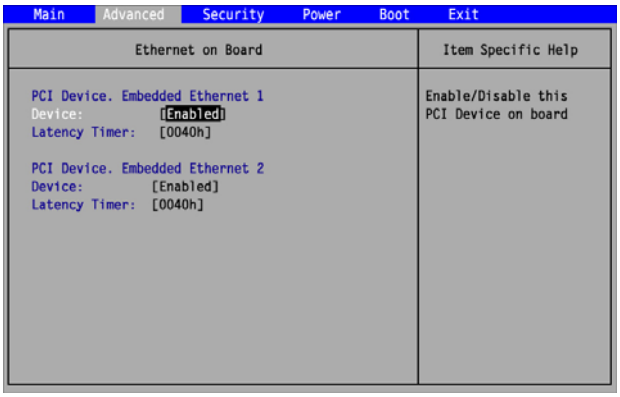


Table 8 Ethernet on Board submenu fields

Field	Description	Options
Device	Select whether to enable the related onboard Ethernet controller.	**Enabled** Disabled
Latency Timer	Set the guaranteed time slice allocated to the PCI bus master.	Default 0020h **0040h** 0060h 0080h 00A0h 00E0h 00C0h

PCI Slots Configuration submenu

Figure 11 PCI Slots Configuration submenu

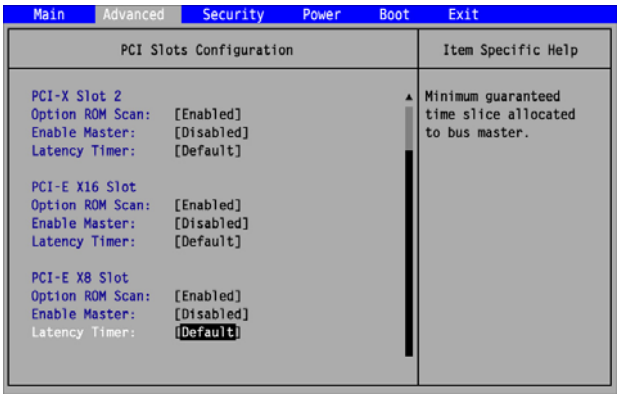


Table 9 PCI Slots Configuration submenu fields

Field	Description	Options
Option ROM Scan	When enabled, this setting will initialize the device expansion ROM for the related PCI slot.	**Enabled** Disabled
Enable Master	When enabled, the selected device is set as the PCI bus master.	Enabled **Disabled**
Latency Timer	Set the clock rate for the PCI bus master. **Note:** Different operating systems require different bus master clock rate.	**Default** 0020h 0040h 0060h 0080h 00A0h 00E0h 00C0h

I/O Device Configuration submenu

Figure 12 I/O Device Configuration submenu

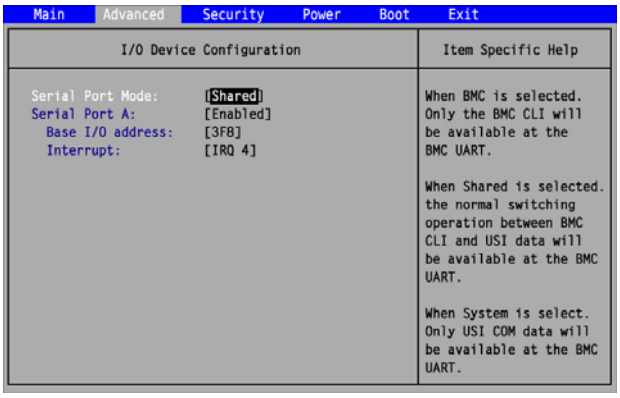

Main
Advanced
Security
Power
Boot
Exit
I/O Device Configuration
Item Specific Help
Serial Port Mode: [Shared]
Serial Port A: [Enabled]
Base I/O address: [3F8]
Interrupt: [IRQ 4]
When BMC is selected. Only the BMC CLI will be available at the BMC UART.
When Shared is selected. the normal switching operation between BMC CLI and USI data will be available at the BMC UART.
When System is select. Only USI COM data will be available at the BMC UART.

Table 10 I/O Device Configuration submenu fields

Field	Description	Options
Serial Port Mode	Select the serial port operation mode.	BMC **Shared** System
Serial Port A	This field allows the user to assign control for the serial port. When set to **Enabled**, users can manually configure the serial port settings.	**Enabled** Disabled Auto
Base I/O Address	Base address of the serial port. This field is automatically set to **3F8** and is non-configurable.	
Interrupt	IRQ setting of the serial port. This field is automatically set to **IRQ 4** and is non-configurable.	

Console Redirection submenu

Figure 13 Console Redirection submenu

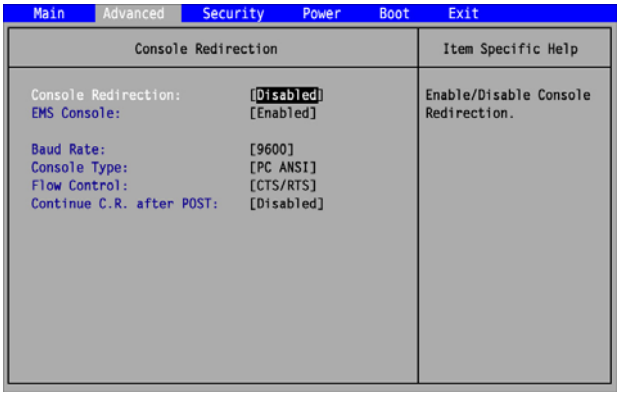


Table 11 Console Redirection submenu fields

Field	Description	Options
Console Redirection	Select whether to enable console redirection. Console redirection (C.R.) enables users to manage the system from a remote location using an in-band connection. The most common in-band remote-management hardware device is a network adapter.	Enabled **Disabled**
EMS Console	Select whether to enable the Emergency Management Services (EMS) function for systems using a Windows NOS. EMS is a new feature in the Microsoft Windows Server 2003 family. This feature enables users to perform remote management and system recovery tasks when the server is unavailable through the network or other standard remote administration tools and mechanisms. **Note:** EMS is not supported in non-Windows NOS systems. This submenu will still be visible on such systems, but enabling it will have no effect on system operations.	**Enabled** Disabled
Baud Rate	Select the baud rate for console redirection.	**9600** 19.2K 38.4K 57.6K 115.2K
Console Type	Select a terminal type used for console redirection.	VT 100 VT100, 8 bit PC ANSI, 7 bit **PC ANSI** VT 100+ VT-UTF8 ASCII
Flow Control	Assign control for the console redirection flow.	None XON/XOFF **CTS/RTS**
Continue C. R. after POST	Select whether to enable console redirection after POST.	Enabled **Disabled**

Note: In a Windows NOS-based server, users can either choose to enable Console Redirection or EMS to remotely manage the server. C.R. usually uses an in-band connection, while EMS employs an out-of-band connection.

IPMI submenu

Figure 14 IPMI submenu

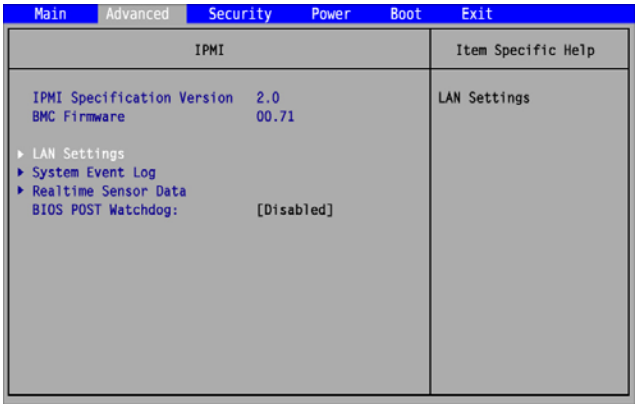


Table 12 IPMI submenu fields

Field	Description
IPMI Specification Version	System's IPMI standard compliance
BMC Firmware	Version of the system BMC firmware
LAN Settings	Displays the current LAN configuration settings. Press **Enter** to access the related submenu.
System Event Log	Displays the configuration settings related to the system event log. Press **Enter** to access the related submenu.
Realtime Sensor Data	Displays a real-time record of system temperature and voltage. Press **Enter** to access the related submenu.
BIOS POST Watchdog	When enabled, the system automatically reboots once the watchdog timer (set by the host operating system) count reaches zero. Default setting is **Disabled**. A watchdog timer is a computer hardware that triggers a system reboot if the main program detects a faulty condition with the goal of resuming normal operation.

LAN Settings submenu

Figure 15 LAN Settings submenu

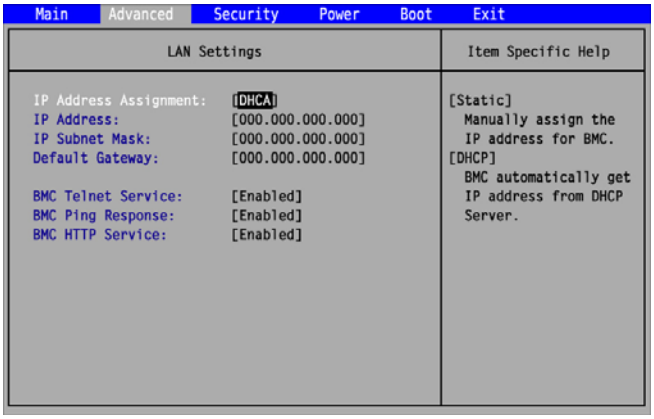


Table 13 LAN Settings submenu fields

Field	Description	Options
IP Address Assignment	Select the manner of assigning the BMC IP address.	Static **DHCP**
IP Address	Local system IP address	
IP Subnet Mask	System subnet mask	
Default Gateway	System gateway address	

Table 13 LAN Settings submenu fields

Field	Description	Options
BMC Telnet Service	Select whether to enable the BMC Telnet service.	**Enabled** Disabled
BMC Ping Response	Select whether to enable the ICMP ping response function.	**Enabled** Disabled
BMC HTTP Service	Select whether to enable the BMC HTTP service.	**Enabled** Disabled

System Event Log submenu

Figure 16 System Event Log submenu

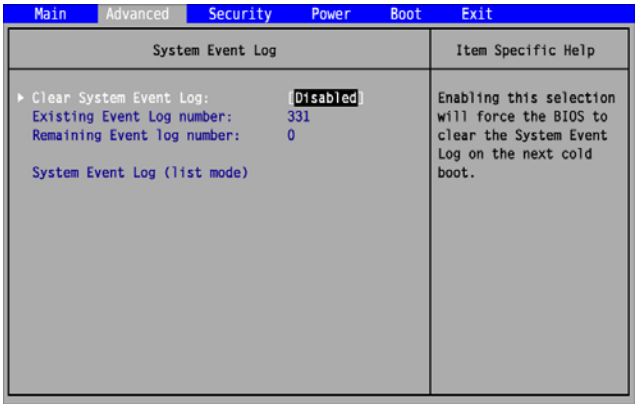
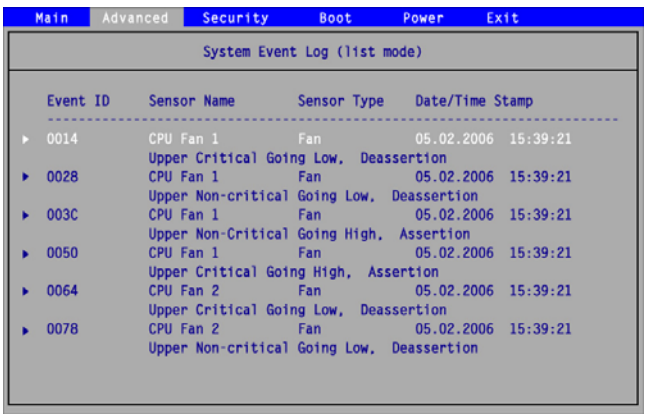


Table 14 System Event Log submenu fields

Field	Description
Clear System Event Log	Select whether to delete all system event log (SEL) entries during the next system start-up. Default setting is **Disabled**.
Existing Event Log Number	Number of recorded SEL entries
Remaining Log Number	Number of remaining SEL entries
System Event Log (list mode)	Press **Enter** to view the SEL in list mode. To view the details of a SEL entry, select it then press **Enter**. Figure 17 below shows a sample log.

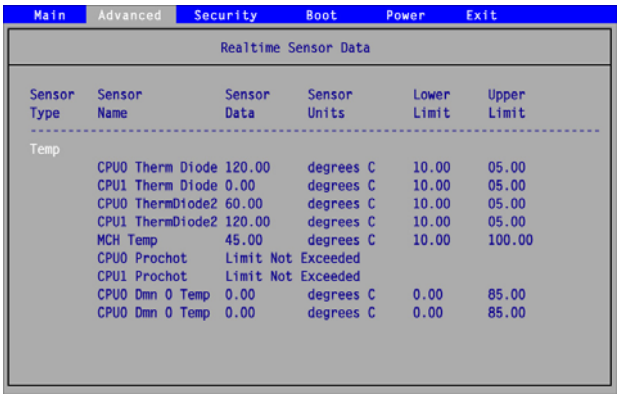
Figure 17 System event log


Main
Advanced
Security
Boot
Power
Exit
System Event Log (list mode)
Event ID Sensor Name Sensor Type Date/Time Stamp
0014 CPU Fan 1 Fan 05.02.2006 15:39:21
Upper Critical Going Low, Deassertion
0028 CPU Fan 1 Fan 05.02.2006 15:39:21
Upper Non-critical Going Low, Deassertion
003C CPU Fan 1 Fan 05.02.2006 15:39:21
Upper Non-Critical Going High, Assertion
0050 CPU Fan 1 Fan 05.02.2006 15:39:21
Upper Critical Going High, Assertion
0064 CPU Fan 2 Fan 05.02.2006 15:39:21
Upper Critical Going Low, Deassertion
0078 CPU Fan 2 Fan 05.02.2006 15:39:21
Upper Non-critical Going Low, Deassertion

Realtime Sensor Data submenu

The Realtime Sensor Data submenu displays the current values for various hardware monitors, including their minimum and maximum threshold levels. Status for the system switches and the ACPI function are also displayed. Use the PgUp and PgDn keys to view the whole record.

Figure 18 Realtime Sensor Data submenu


Main Advanced Security Boot Power Exit
Realtime Sensor Data
Sensor Type | Sensor Name | Sensor Data | Sensor Units | Lower Limit | Upper Limit
Temp
CPU0 Therm Diode 120.00 degrees C 10.00 05.00
CPU1 Therm Diode 0.00 degrees C 10.00 05.00
CPU0 ThermDiode2 60.00 degrees C 10.00 05.00
CPU1 ThermDiode2 120.00 degrees C 10.00 05.00
MCH Temp 45.00 degrees C 10.00 100.00
CPU0 Prochot Limit Not Exceeded
CPU1 Prochot Limit Not Exceeded
CPU0 Dmn 0 Temp 0.00 degrees C 0.00 85.00
CPU0 Dmn 0 Temp 0.00 degrees C 0.00 85.00

Security menu

The Security menu allows users to set an administrator password. When entered, this password will allow the user to access and change all settings in the Setup Utility.

Figure 19 Setup Security menu

Main Advanced Security Boot Power Exit
Administrator Password Is: Clear
Set Administrator Password: [Enter]
Item Specific Help
Administrator Password controls access to the setup utility.

To set an administrator password:

1. In the Security menu screen, select the **Administrator Password Is** field, then press **Enter**.
2. Type a new password in the password box.
   The password may consist of up to eight alphanumeric characters (A-Z, a-z, 0-9).
3. Retype the password to verify the first entry, then press **Enter**.

Figure 20 Setting an administrator password

4. Press **F10** to save the password and close the Setup Utility.
   After setting the password, Setup automatically sets the selected password field to **Enabled**.

To change the administrator password:

1. In the Security menu screen, select the **Administrator Password Is** field, then press **Enter**.
2. Type the original password in the password box.
3. Type a new password, then press **Enter**.
4. Retype the new password to verify the first entry, then press **Enter** again.
5. Press **F10** to save the password and close the Setup Utility.

To remove the administrator password:

1. In the Security menu screen, select the **Administrator Password Is** field, then press **Enter**.
2. Type the original password then press **Enter**.
3. Press **Enter** twice without entering anything in the new and confirm password fields.
4. Press **F10** to save the changes you made and close the Setup Utility.

   Setup automatically sets the selected password field to **Clear**.

To reset the administrator password:

If you forget the administrator password, you need to clear the CMOS and reset the BIOS settings to regain access the Setup Utility. For instructions, refer to the "Clearing CMOS" section on page 21.

Boot menu

Figure 21 Setup Boot menu

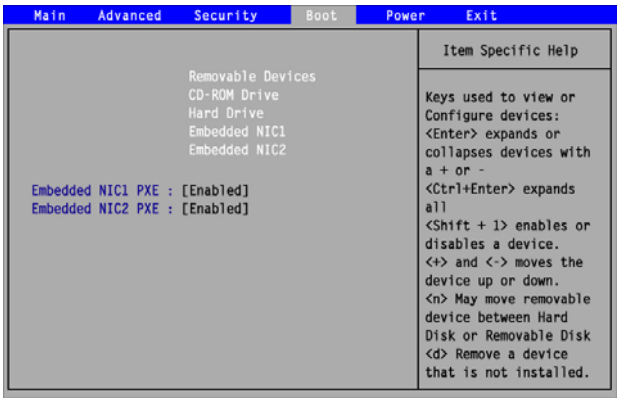


Table 15 Boot menu fields

Field	Description
[bootable device list]	Set the boot search sequence during POST. By default, the server searches for boot devices in the following order: **1** CD-ROM drive (IDE and USB CD-ROM drives) **2** Removable device **3** Hard drive **4** Embedded NIC1* **5** Embedded NIC2* * Via PXE (Preboot Execution Environment, remote boot)
Embedded NIC1 PXE	Select whether to enable (default) PXE function for LAN port 1.
Embedded NIC2 PXE	Select whether to enable (default) PXE function for LAN port 2.

Power menu

Figure 22 Setup Power menu

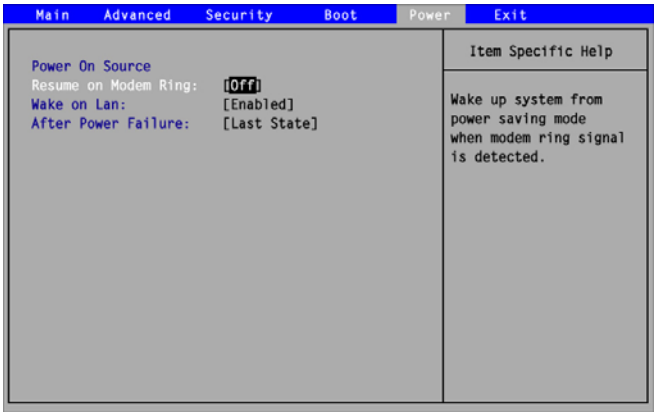

Main Advanced Security Boot Power Exit
Power On Source
Resume on Modem Ring: [Off]
Wake on Lan: [Enabled]
After Power Failure: [Last State]
Item Specific Help
Wake up system from power saving mode when modem ring signal is detected.

Table 16 Power menu fields

Field	Description	Options
Resume on Modem Ring	Select whether to wake up system when an incoming call is detected on the modem (via the serial port).	**Off** On
Wake on LAN	Select whether to wake up system when a LAN activity is detected (via the onboard LAN controller or an add-on LAN card).	**Enabled** Disabled
After Power Failure	Specify the power state to resume to after a system shutdown that is due to an interruption in AC power.	**Last State** Stay Off Power On

Exit menu

The Exit menu displays the several options on how to quit from the Setup Utility. Select any of the exit options then press **Enter**.

Figure 23 Setup Exit menu

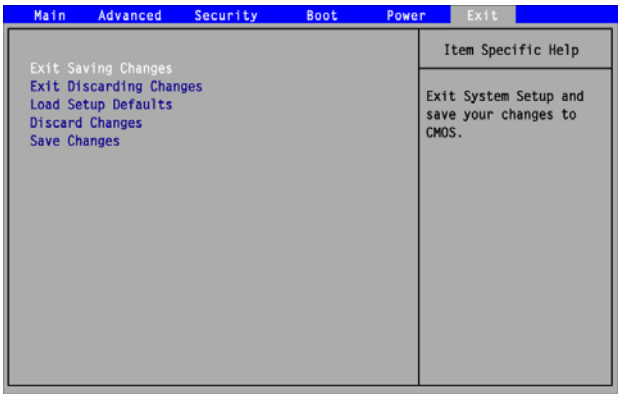


Table 17 Exit menu options

Option	Description
Exit Saving Changes	Save the changes made and close the Setup Utility. Keyboard shortcut: **F10**
Exit Discarding Changes	Discard changes made and close the Setup Utility. Keyboard shortcut: **Esc**
Load Setup Defaults	Loads the default settings for all BIOS setup fields. Keyboard shortcut: **F9**
Discard Changes	Discards all changes made in the Setup Utility.
Save Changes	Saves changes made in the Setup Utility.

Boot-time diagnostic screen

The boot-time diagnostic screen displays basic and important information about the current server configuration and is necessary for troubleshooting and may be required when asking for technical support. These information include:

- Processor specifications
- BIOS version and release date
- BMC firmware version
- Size of the system and video memory, as well as the memory size allotted for the cache RAM and option ROM
- Serial port base I/O address
- Available hard drives and expansion boards
- Server asset tag and serial number
- MAC address of each of the three LAN ports

It is recommended that you check this screen during the initial system setup and each time you install, remove, or upgrade accessories.

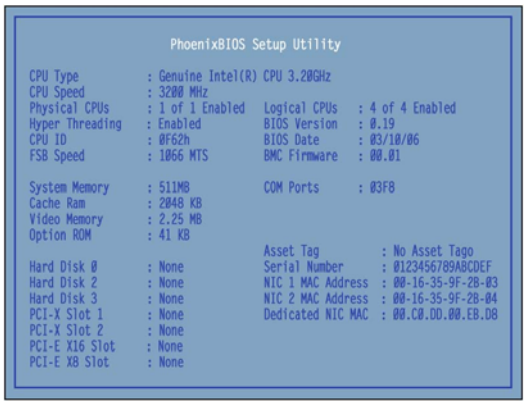
To view the boot-time diagnostic screen:

You first need to enable the display of the diagnostic screen during bootup. Follow the steps below.

1. In the Main menu screen, select **Boot Features**.
2. Select the **Summary Screen** field.
3. Press the plus (+) or minus (-) key to set the field to **Enabled**.
4. Press **F10** to save the changes you made and close the Setup Utility.
5. Reboot the server.

   The diagnostic screen is displayed briefly at the end of POST.

Figure 24 Boot-time diagnostic screen


PhoenixBIOS Setup Utility
CPU Type : Genuine Intel(R) CPU 3.20GHz
CPU Speed : 3200 MHz
Physical CPUs : 1 of 1 Enabled
Logical CPUs : 4 of 4 Enabled
Hyper Threading : Enabled
BIOS Version : 0.19
CPU ID : 0F62h
BIOS Date : 03/10/06
FSB Speed : 1066 MTS
BMC Firmware : 00.01
System Memory : 511MB
COM Ports : 03F8
Cache Ram : 2048 KB
Video Memory : 2.25 MB
Option ROM : 41 KB
Asset Tag : No Asset Tago
Hard Disk 0 : None
Serial Number : 0123456789ABCDEF
Hard Disk 2 : None
NIC 1 MAC Address : 00-16-35-9F-2B-03
Hard Disk 3 : None
NIC 2 MAC Address : 00-16-35-9F-2B-04
PCI-X Slot 1 : None
Dedicated NIC MAC : 00.C0.DD.00.EB.D8
PCI-X Slot 2 : None
PCI-E X16 Slot : None
PCI-E X8 Slot : None

6. Press the **Pause/Break** key to continue displaying the screen until another key is pressed.
7. Press any key to continue with the system bootup.

Recording custom Setup values

Keep a record of the custom Setup values you have set up for your system BIOS. If the custom values ever need restoring (after a CMOS clear, for example), you must run the Setup Utility and enter these custom settings again. Make sure to update this record whenever you make any change to these Setup settings or install new hardware.

You can either record the Setup values manually (hard copy) or use a CMOS backup utility.

To manually record the custom Setup values:

1. Access the Setup utility.
2. Go through each menu and submenus page, and press **Print Screen** to make a hard copy.

   For multiple page menus, move to each page and print each screen.

   If a printer is not available, write down the values on a piece of paper. Make sure to write them down legibly and accurately.
3. Label and date the Setup values hard copy, then store it in a safe and accessible place, preferably with other user documentation for your ProLiant server.

CMOS backup utility

There are third-party utilities that read the CMOS settings and record them to a regular file, which can then be backed up through normal means, or copied to an external storage media. Some of these utilities also offer the option of restoring the CMOS settings so you need not re-enter them manually.

These utilities are not always compatible with all versions of CMOS or types of CMOS. The same applies to the operating system version. Be sure to use a CMOS backup utility that is designed for the particular CMOS type and OS version installed in your ProLiant server. For information on a compatible CMOS backup utility, contact your local HP representative.

Loading system defaults

If your system fails after you make changes in the Setup menus, reboot the server, enter Setup and load the system default settings to correct the error. These default settings have been selected to optimize your server's performance.

To load the system defaults:

1. Reboot the server in a normal manner.
2. During POST, press **F10** to access the Setup Utility.
3. Press **F9** to load the default values.
4. Press **F10** to save the changes you made and close the Setup Utility.

Clearing CMOS

You may need to clear the Setup configuration values (CMOS) if the configuration has been corrupted, or if incorrect settings made in the Setup Utility caused error messages to be unreadable. Clearing the CMOS data removes the administrator password.

The clear CMOS switch is switch 2 of the system configuration switch (SW2). Go to Chapter 4 of the *HP ProLiant DL140 Generation 3 Server Maintenance and Service Guide* for the location of this switch.

To clear CMOS:

1. Remove the top cover.
2. If necessary, remove any expansion boards, assemblies or cables that prevent access to the system configuration switch.
3. Locate the system configuration switch (SW2) on the system board.
4. Identify SW2-2 of the switch.

   By default, SW2-2 is set to the **Off** position.
5. Set SW2-2 to the **On** position.

   This will clear the CMOS memory.
6. Switch SW2-2 back to its default **Off** position.
7. Perform the post-installation procedure described on Chapter 2 of the *HP ProLiant DL140 Generation 3 Server Maintenance and Service Guide*.
8. During POST, press **F10** to access the Setup Utility.
9. Press **F9** to load the system default values.
10. Press **F10** to save the changes you made and close the Setup Utility.

Power-On Self Test (POST)

When the server boots up, a series of tests are displayed on the screen. This is referred to as Power–On Self–Test or POST. POST is a series of diagnostic tests that checks firmware and assemblies to ensure that the server is properly functioning. This diagnostic function automatically runs each time the server is powered on.

These diagnostics, which reside in the BIOS ROM, isolate server-related logic failures and indicate the board or component that needs to be replaced, as indicated by the error messages. Most server hardware failures will be accurately isolated during POST. The number of tests displayed depends on the configuration of the server.

POST error indicators

When POST detects a system failure, it either displays a POST error message, or emits a series of beep codes.

POST errors messages

Whenever a non-fatal error occurs during POST, an error message describing the problem appears onscreen. These text messages are displayed in normal video (white text on black background). It shows the details of the error. The following is an example of a POST error message:

```
Error message 1 of 1:  Error code 0103

Keyboard not detected - Keyboard error
```

In some cases an error message may include recommendations for troubleshooting or require that you press the **Enter** key to display recommendations. Follow the instructions on the screen.

Table 18 lists down the most common POST error messages with their corresponding troubleshooting recommendation. It is recommended that you correct the error before proceeding, even if the server appears to boot successfully.

If your system displays one of the messages marked below with an asterisk (*), write down the code and message and contact your HP Customer Support provider.

When no POST error message is displayed but the server stops during POST, listen for beep codes.

Table 18 POST error messages

Error code	Error message	Description/corrective action
0200	Failure Fixed Disk	Fixed disk is not working or not configured properly. **1** Run Setup and check if the fixed-disk type is correctly identified. **2** Check to see if fixed disk is attached properly.
0210	Stuck key	Stuck key on keyboard. **1** Locate the stuck key on your keyboard and release it. **2** Reboot the server.
0211	Keyboard error	Keyboard not working. Verify that the keyboard cable is securely connected to the keyboard port (not the mouse port) on the rear panel of the server. If the problem persists, replace the keyboard or contact your HP Customer Support provider.
0212	Keyboard Controller Failed	Keyboard controller failed test.
0220	Monitor type does not match CMOS - Run SETUP	The attached monitor cannot be correctly identified by Setup. Run Setup and check if the monitor type is correctly identified.
0250	System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the system battery is dead. **1** Replace the system battery following the procedures on page 48 of the *HP ProLiant DL140 Generation 3 Server Maintenance and Service Guide*. **2** Run Setup to reconfigure the system.

Table 18 POST error messages

Error code	Error message	Description/corrective action
0251	System CMOS checksum bad - Default configuration used	The settings in the Setup Utility have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. You can either load the system default values or access Setup and enter your own custom values. If the error persists, check the system battery or contact your HP Customer Support provider. If the error persists, check the system battery or contact your HP Customer Support provider.
0260	System timer error	The timer test failed. Requires repair of the system board.
0270	Real time clock error	Real-Time Clock (RTC) fails BIOS hardware test. May require board repair.
0271	Check date and time settings	BIOS found date or time out of range and reset the RTC. May require setting legal date (1991-2099). Access Setup and check the values in the **System Time** and S**ystem Date** fields of the Main menu.
0280	Previous boot incomplete – Default configuration used	Initial bootup failed. BIOS automatically loads the default system values, then boots again.
0281	Memory size found by POST differed from CMOS	The user added or removed a memory module, thus the system memory size is different from the previous bootup value.
02F5	DMA test failed	The DMA control test failed.
02F6	Software NMI failed	An NMI signal is detected and/or user has pressed the NMI switch.

POST beep codes

There are several POST routines that issue a POST terminal error and shut down the system if they fail. Before shutting down the system, the terminal-error handler issues a beep code signifying the test point error, writes the error to port 80h, attempts to initialize the video, and writes the error in the upper left corner of the screen (using both mono and color adapters).

The POST routines cannot display messages when an error occurs if any of the following are present.

- The error occurs before the video display is initialized.
- The video configuration fails, either there's no graphics card installed or the one installed is faulty.
- An external ROM module does not properly checksum to zero.
- The system memory cannot be initialized.

During these instances the server unit emits a buzzing sound followed by a series of audible beeps. An external ROM module (e.g. VGA) can also issue audible errors, usually consisting of one long tone followed by a series of short tones. If you get a blank screen on boot, but hear beeps, count the beeps and refer to the following table for their corresponding meaning. If you miss the beep code:

1. Turn off the server by pressing the power button for five seconds or more.
2. Restart the server by pressing the power button.
3. Listen for the signal again.

The routine derives the beep code from the test point error as follows:

1. The 8-bit error code is broken down to four 2-bit groups (Discard the most significant group if it is 00).
2. Each group is made one-based (1 through 4) by adding 1.
3. Short beeps are generated for the number in each group.

   Example:

   Test point 01Ah = 00 01 10 10 = 1-2-3-3 beeps

Table 19 lists the checkpoint codes written at the start of each test and the beep codes issued for terminal errors.

Table 19 POST beep codes

Code	Beep	Description
02h		Verify real mode
03h		Disable non-maskable interrupts
04h		Get processor type
06h		Initialize system hardware
07h		Disable shadow and execute code from the ROM
08h		Initialize chipset with initial POST values
09h		Set IN POST flag
0Ah		Initialize processor registers
0Bh		Enable processor cache
0Ch		Initialize caches to initial POST values
0Eh		Initialize I/O component
0Fh		Initialize the local bus IDE
10h		Initialize power management
11h		Load alternate registers with initial POST values
12h		Restore processor control word during warm boot
13h		Initialize PCI bus mastering devices
14h		Initialize keyboard controller
16h	1-2-2-3	BIOS ROM checksum
17h		Initialize cache before memory auto size
18h		8254 timer initialization
1Ah		8237 DMA controller initialization
1Ch		Reset programmable interrupt controller
20h	1-3-1-1	Test DRAM refresh
22h	1-3-1-3	Test 8742 keyboard controller
24h		Set ES segment register to 4 GB
28h		Auto size DRAM
29h		Initialize POST Memory Manager
2Ah		Clear 512 KB base RAM
2Ch	1-3-4-1	RAM failure on address line xxxx
2Eh	1-3-4-3	RAM failure on data bits xxxx of low byte of memory bus
2Fh		Enable cache before system BIOS shadow
32h		Test processor bus-clock frequency
33h		Initialize Phoenix Dispatch Manager
36h		Warm start shut down
38h		Shadow system BIOS ROM
3Ah		Auto size cache
3Ch		Advanced configuration of chipset registers
3Dh		Load alternate registers with CMOS values
41h		Initialize extended memory for ROM pilot
42h		Initialize interrupt vectors

Table 19 POST beep codes

Code	Beep	Description
45h		POST device initialization
46h	2-1-2-3	Check ROM copyright notice
47h		Initialize I20 support
48h		Check video configuration against CMOS
49h		Initialize PCI bus and devices
4Ah		Initialize all video adapters in system
4Bh		Quiet boot start (optional)
4Ch		Shadow video BIOS ROM
4Eh		Display BIOS copyright notice
4Fh		Initialize multi-boot
50h		Display processor type and speed
51h		Initialize EISA board
52h		Test keyboard
54h		Set key click if enabled
55h		Enable USB devices
58h	2-2-3-1	Test for unexpected interrupts
59h		Initialize POST display service
5Ah		Display prompt "Press F10 to enter SETUP"
5Bh		Disable processor cache
5Ch		Test RAM between 512 and 640 KB
60h		Test extended memory
62h		Test extended memory address lines
64h		Jump to user patch 1
66h		Configure advanced cache registers
67h		Initialize multiprocessor APIC
68h		Enable external and processor caches
69h		Setup System Management Mode (SMM) area
6Ah		Display external L2 cache size
6Bh		Load custom defaults (optional)
6Ch		Display shadow-area message
6Eh		Display possible high address for UMB recovery
70h		Display error messages
72h		Check for configuration errors
76h		Check for keyboard errors
7Ch		Set up hardware interrupt vectors
7Dh		Initialize Intelligent System Monitoring
7Eh		Initialize coprocessor if present
80h		Disable onboard super I/O ports and IRQs
81h		Late POST device initialization
82h		Detect and install external RS232 ports
83h		Configure non-MCD IDE controllers

Table 19 POST beep codes

Code	Beep	Description
84h		Detect and install external parallel ports
85h		Initialize PC-compatible PnP ISA devices
86h		Re-initialize onboard I/O ports.
87h		Configure system board configurable devices (optional)
88h		Initialize BIOS data area
89h		Enable non-maskable interrupts
8Ah		Initialize extended BIOS data area
8Bh		Test and initialize PS/2 mouse
8Ch		Initialize floppy controller
8Fh		Determine number of ATA drives (optional)
90h		Initialize hard disk controllers
91h		Initialize local bus hard disk controllers
92h		Jump to user patch 2
93h		Build MP table for multi-processor boards
95h		Install CD-ROM for boot
96h		Clear huge ES segment register
97h		Fix up MP table
98h	1-2	Search for option ROMs. One long, two short beeps on checksum failure
99h		Check for SMART drive (optional)
9Ah		Shadow option ROMs
9Ch		Set up power management
9Dh		Initialize security engine (optional)
9Eh		Enable hardware interrupts
9Fh		Determine number of SATA and/or SAS drives
A0h		Set time of day
A2h		Check key lock
A4h		Initialize typematic rate
A8h		Erase F10 prompt
AAh		Scan for F10 key stroke
ACh		Enter Setup
AEh		Clear boot flag
B0h		Check for errors
B1h		Inform ROM pilot about the end of POST.
B2h		POST done, prepare to boot operating system
B4h	1	One short beep before boot
B5h		Terminate quiet boot (optional)
B6h		Check password (optional)
B7h		Initialize ACPI BIOS
B9h		Prepare boot
BAh		Initialize SMBIOS
BBh		Initialize PnP option ROMs

Table 19 POST beep codes

Code	Beep	Description
BCh		Clear parity checkers
BDh		Display Multi-boot menu
BEh		Clear screen (optional)
BFh		Check virus and backup reminders
C0h		Try to boot with INT 19
C1h		Initialize POST Error Manager (PEM)
C2h		Initialize error logging
C3h		Initialize error display function
C4h		Initialize system error handler
C5h		PnP and dual CMOS (optional)
C6h		Initialize note dock (optional)
C7h		Initialize note dock late
C8h		Force check (optional)
C9h		Extended checksum (optional)
CAh		Redirect Int 15h to enable remote keyboard
CBh		Redirect Int 13h to memory technologies devices such as ROM, RAM, PCMCIA, and serial disk
CCh		Redirect Int 10h to enable remote serial video
CDh		Re-map I/O and memory for PCMCIA
CEh		Initialize digitizer and display message
D2h		Unknown interrupt
The following are for boot block in flash ROM.		
E0h		Initialize the chipset
E1h		Initialize the bridge
E2h		Initialize the processor
E3h		Initialize system timer
E4h		Initialize system I/O
E5h		Check force recovery boot
E6h		Checksum BIOS ROM
E7h		Go to BIOS
E8h		Set huge segment
E9h		Initialize multiprocessor
EAh		Initialize OEM special code
EBh		Initialize PIC and DMA
ECh		Initialize memory type
EDh		Initialize memory size
EEh		Shadow boot block
EFh		System memory test
F0h		Initialize interrupt vectors
F1h		Initialize runtime clock
F2h		Initialize video
F3h		Initialize System Management Manager

Table 19 POST beep codes

Code	Beep	Description
F4h		Output one beep
F5h		Clear huge segment
F6h		Boot to mini DOS
F7h		Boot to full DOS

RAID configuration

RAID overview

RAID–redundant array of independent (originally, inexpensive) disks–is a method of replicating the same data on multiple hard disks (thus, redundantly). In this system's case, in two SATA hard drives. By storing data on multiple locations, I/O operations can be performed in parallel boosting system performance. RAID also improves system reliability by increasing the mean time between failures (MTBF). Furthermore, RAID enables real-time data recovery during hard drive failure, thus protecting users from data loss and system downtime.

The HP ProLiant DL140 Generation 3 system supports both RAID 0 and RAID 1 levels.

- RAID 0 – Supports data striping (splitting data evenly across two or more disks) but no parity information for redundancy. This level provides improved performance but not data protection. If one drive fails then all data in the array is lost.
- RAID 1 – Employs disk mirroring, a technique in which data is stored on two duplicate disks simultaneously. This way if one of the drives fails, the system can instantly switch to the other drive without any loss of data or service.

SATA RAID configuration

When using non-hot-plug SATA hard drives, RAID function is embedded in the BIOS chipset. While for hot-plug SATA/SAS hard drives, the function is based on the installed standard height/full-length PCI-X SATA/SAS controller board. The procedure below applies to systems using non-hot-plug SATA drives.

CAUTION: Back up any data stored on the hard drives before performing the procedures below. The configuration process erases all data on the hard drives.

NOTE: Before performing the procedure below, verify that the two non-hot-plug SATA drives are installed in the system.

To set up RAID for non-hot-plug SATA drives:

1. Turn on the monitor and the server.
   If the server is already turned on, save your data and close all open applications, then restart the server.
2. During POST, press **F10** to launch the *Phoenix*BIOS Setup Utility.
   If you fail to press **F10** before POST is completed, you will need to restart the server.
3. In the Setup Utility screen, click the **Advanced** menu tab.
4. Select the **Advanced Chipset Control** field.
5. Select the **SATA Controller Mode Option** field, then press the plus (+) or minus (-) key to set the field value to Enhanced.
6. Select the **SATA RAID Enable** field, then press the plus (+) or minus (-) key to set the field value to Enabled.
7. Press **F10**, then select **Yes** to save the changes you made and close the Setup Utility.
   The system automatically reboots. You will be prompted to enter the HP Embedded SATA Setup Utility.
8. Press **F8** to access the HP Embedded SATA Setup Utility.

9. In the Option menu box, select **Array Configuration Utility**.
10. In the Main Menu box, select **Configure Drives**.
11. Select the hard drives you want to include in the RAID setup, then press **Enter**.
    A warning message appears.
12. Type `Yes` then press **Enter**.
    The selected drives will be configured with array information.
13. After the completing the initial drive configuration, select **Create Arrays** in the Main Menu.
14. Select the hard drives you want to include in the array, then press **Enter**.
15. In the Array Properties box, set the values for the RAID properties.
    To view possible options for each property, select a property, then press **F1**.
    a. Select an array type (RAID level).
    b. Enter an array label.
    c. Select the stripe size.
    d. Select the manner of creating the array.
16. Select **Done**, then press **Enter**.
    The system automatically configures the RAID level, erasing all existing data on the hard drives.
17. Once the configuration process is complete, press **Esc** to close the HP Embedded SATA Setup Utility.
18. In the Exit Utility prompt, select **Yes**, then press **Enter**.
    The system will automatically reboot and initialize the created array.

Network operating system (NOS) installation

Supported NOS

Table 20 List of supported NOS

NOS	Version	On-line information site
Microsoft Windows	Microsoft Windows 2003 Server—Enterprise, Standard, and Web Editions Microsoft Windows Server 2003 R2—Enterprise, Standard, and Web Editions Microsoft Windows Vista—Enterprise, Standard, and Web Editions	Microsoft World Wide Web access: **www.microsoft.com** Microsoft Product Support Services: **http://support.microsoft.com/directory** Microsoft Software BBS: 206-936-6735 (14,400 bps)
Red Hat Enterprise Linux	Red Hat Enterprise Linux 3—AS, ES, and WS versions Red Hat Enterprise Linux 4 Update 2, x86/x64 Editions—AS, ES, and WS versions	**www.redhat.com**
SUSE Linux Enterprise Server	SUSE Linux Enterprise Server 9 SUSE Linux Enterprise Server 10, x86/x64 Editions	**www.novell.com/linux**
Sun Solaris Enterprise	Sun Solaris 10	**www.sun.com/solaris**

NOS pre-installation procedure

Perform the two pre-NOS installation steps in this section before installing the NOS of your choice.

1. Configure the hardware aspect of the server.
2. Update the server BIOS.

Hardware setup

Prepare the server following the instructions in the *HP ProLiant DL140 Generation 3 Server Installation Sheet*.

It is recommended that you do not install any third party adapter until you verify that the HP equipment is functioning properly and you complete the NOS installation.

Your ProLiant server comes with new hard disk drive(s) that do not need specific setup. However, if you install additional used hard disk drives in your new server:

- Note that most NOS installations remove all data from the hard disk they are installed on. If you wish to use your additional hard disk drives to access existing data in you new server, HP recommends that you install and configure this (these) hard disk drive(s) AFTER completing the NOS installation.
- If you wish to recycle used hard disk drives, use a utility such as `fdisk` to erase all data and partitions from that particular hard drive.

BIOS update

For detailed procedures, refer to Chapter 5 of the *HP ProLiant DL140 Generation 3 Server Maintenance and Service Guide*.

HP recommends that you update the server BIOS with the latest system BIOS version to take advantage of the most recent compatibility fixes. You can download the latest HP ProLiant DL140 Generation 3 server BIOS at **www.hp.com**.

NOTE: For ease of reading, the HP ProLiant DL140 Generation 3 Server Support CD will be simply referred to as the "Support CD".

Installing Microsoft Windows NOS

The procedures in this section apply to all Microsoft Windows NOS versions supported by your ProLiant server. Refer to Table 20 for a list of these NOS versions.

Pre-installation instructions

1. Complete the pre-NOS installation procedures listed on page 31.
2. Have the following installation requirements on hand:
   - HP ProLiant DL140 Generation 3 Server Support CD
   - The applicable Microsoft Windows NOS CD-ROM(s)
   - Six blank, formatted 3.5-inch diskettes
   - A Windows PC that has a:
     - Floppy drive
     - Optical media drive
     - Browser that supports HTML
   - Two or more clients for testing purpose (optional)

Installation flow

1. Create the driver diskettes using the Support CD.
2. Install the Microsoft Windows NOS.
3. Complete the installation—install the drivers for the Intel chipsets, network and VGA.
4. Configure the system.
5. Configure the network.
6. Install additional HP accessories.

Microsoft Windows NOS installation

The procedures in this section apply to all versions of the Microsoft Windows NOS supported by your ProLiant server. Refer to Table 20 on the previous page for a list of these NOS versions.

Section 1. Creating the driver diskettes

Create the appropriate Windows NOS driver diskette to be labeled as HP disk [Windows NOS version].

1. Insert one blank, formatted 3.5" diskette into the PC's floppy drive.
2. Insert the Support CD into the PC's optical media drive.

   By default, the Support CD will automatically run displaying the Welcome page. However, if this does not occur, double-click the `Startup.htm` file located in the root directory of the Support CD.
3. Follow the on-screen instructions to create the Windows NOS driver diskette.
4. Label, date, and save the driver diskette as HP disk [Windows NOS version].

Section 2. Installing Windows NOS

1. Boot the server from the Windows NOS CD-ROM.

   The message "`Setup is inspecting your hardware configuration`" displays; afterwards the Setup screen is displayed.

   The message prompt "`Press F6 if you need to install a third party SCSI or RAID controller`" will be briefly displayed on the bottom of the Setup screen.

   Press **F6** if you wish to install a third party controller; otherwise proceed to step 2.

NOTE: If you missed pressing **F6** before the message is invalidated, you will need to reboot the system to display the message prompt again.

2. Follow the procedures corresponding to the type of hard disk that is installed in the server.
3. In the Welcome to Setup screen, press **Enter** to continue.
4. Press **F8** to accept the licensing agreement.
5. In the drives partitioning screen, select the target drive.

   If you want to use the entire drive to install the Windows NOS then press **Enter**. Otherwise, press **C** to create a drive a partition.

NOTE: Windows Server 2003 does not have the 2-GB limitation present in Windows NT 4.0.

   In this example we will create a 10-GB partition.

   a. Press **C** to create a partition.
   b. In the Create partition size prompt, type `10240`, then press **Enter**.
   c. Select **unpartitioned space** and press **C** again to create additional partitions.

      HP recommends that you create all the partitions needed for each hard drive present on your system.
6. Select the target drive to be used to install the Windows NOS, then press **Enter**.
7. In the next screen, select **Format the partition using the NTFS file system**, then press **Enter**.

   The installer will format and copy files to the hard drive, after which the system will reboot and launch the Windows NOS graphic interface. Be sure to remove the Windows NOS CD-ROM before rebooting.

   You can now proceed through the customization of your installation using the graphical interface.

NOTE: The network settings may need to be customized to your environment. Refer to the Windows NOS manual should you need further details on the networking settings.

8. After completing the customization phase, click **Next** to proceed with the installation.

   The installation status is indicated by the Install Network progress bar. This may take some time. After installation is completed, the system will automatically reboot.
9. In the Welcome to Windows dialog box, press **Ctrl-Alt-Del**, then log on as `Administrator`.

   If you have successfully installed the Windows NOS, the Configure Your Server wizard will be launch. Close this window, as we will postpone the customization of the server until completion of all the installation steps.

   You may open the Configure Your Server wizard at any point by clicking **Start** | **Programs** |**Administrative Tools** | **Configure Your Server**.

Section 3. Completing the installation

Phase 1 - Installing the Intel chipset driver

1. Insert the Support CD in the server's optical media drive.

   By default, the Support CD will automatically run displaying the Welcome page. However, if this does not occur, double-click the `Startup.htm` file located on the root directory of the Support CD.
2. Click the **HP ProLiant DL140 server drivers for chipset, Network, and Video** link.
3. Select the Intel chipset driver option for Windows [NOS version].

   The File Download dialog box displays.
4. Click **Open** to download the driver.

   The Security Warning dialog box displays.
5. Click **Yes**.

   The installation menu for the selected driver will be displayed.
6. Follow the on-screen instructions to install the Intel chipset driver.
7. After completing the installation, reboot the server.

Phase 2 - Installing the HP LAN driver

During the Windows NOS installation, the OS may not detect the embedded HP network interface card. The following procedure will help you install the LAN driver using the Support CD.

1. Insert the Support CD in the server's optical media drive.

   By default, the Support CD will automatically run displaying the Welcome page. Close this window. However, if this does not occur, double-click the `Startup.htm` file located on the root directory of the Support CD.
2. Click **HP ProLiant DL140 server drivers for chipset, Network, and Video**.
3. Select the embedded LAN driver option for Windows [NOS version].
4. Click **Open** on the File Download dialog box to download the HP network driver.
5. Click **Yes** on the Security Warning dialog box.
6. Insert a blank floppy diskette on the server's floppy drive.
7. Unzip the HP network driver to the floppy diskette.
8. Click **Start** | **Settings** | **Control Panel** | **System** | **Hardware** | **Device Manager**.
9. Open the yellow question marked **Other Devices** tree and double-click on the appropriate Ethernet Controller option to display its menu.
10. Follow the installation wizard for additional configuration.
11. Wait for the system to display the embedded LAN driver saved on the floppy drive, and then click **Next**.
12. Click **Finish** once the LAN driver has been loaded.
13. Repeat steps 2 through 12 to install the second HP LAN driver.
14. Close all open windows and restart the server in order to properly initialize the LAN adapter.
15. After restarting Windows, configure the network settings for the LAN card in order to connect to your network. Verify connectivity.

Phase 3 - Installing the embedded video driver

1. Insert the Support CD in the server's optical media drive.

   By default, the Support CD will automatically run displaying the Welcome page. However, if this does not occur, double-click the `Startup.htm` file located on the root directory of the Support CD.
2. Click the **HP ProLiant DL140 server drivers for chipset, Network, and Video** link.
3. Select the embedded VGA driver for the Windows [NOS version].

   The File Download dialog box displays.
4. Click **Open** to download the driver.

   The Security Warning dialog box displays.
5. Click **Yes**.

   The installation menu for the selected driver will be displayed.
6. Follow the on-screen instructions to install the embedded VGA driver.
7. After completing the installation, reboot the server.

Section 4. Configuring the system

Phase 1 - Performing a hardware status check

In this section you will run the Windows NOS Device Manager tool to identify any issues with the installed devices or resource conflicts.

1. Click **Start** | **Settings** | **Control Panel** | **System** | **Hardware** | **Device Manager**.
2. Verify that no devices have either a yellow exclamation mark (!) or question mark (?) symbol next to it.
   - Exclamation mark (!) means that there is a resource issue with the device.
   - Question mark (?) means that the device is unknown.

     If (!) or (?) symbols are reported then double-click on each of the devices with (!) or (?). Refer to the "`Device Status`" message for troubleshooting. Or if a printer is available, use the **View** | **Print** command from the menu to get a report.

3. Verify if the installed drivers are digitally signed.
   a. In the Device Manager window, select the device (e.g. HP AHA-29160) that you want to verify.
   b. Right-click **Properties** | **Driver**.
   c. Locate the **Digital Signer**.
      If the driver of that device is digitally signed then it will display "`Microsoft Windows Publisher`" or "`Microsoft Windows Hardware Compatibility Publisher`".
      If the driver of the device is not digitally signed we recommend that you check HP's website at **www.hp.com** to install the latest driver package.
4. Close the Device Manager, System Properties, and Control Panel windows.
5. Click **Start** | **Programs** | **Administrative Tools** | **Event Viewer** to make sure that there are no errors in the log.

NOTE: The Windows NOS Event Viewer may have recorded network errors because your network is not yet configured. Please disregard these errors.

6. Close the Event Viewer window.

Phase 2 - Initializing the hard disk drive

There are two types of hard drive configuration: Dynamic and Basic. You can select the appropriate type by right-clicking on the disk drive icon.

- Dynamic drives are used to create volumes, which can contain more than one physical hard drive.
- Basic drives are used to create primary or local partitioned drives.

To manage different drives and partitions:

1. Click **Start** | **Programs** | **Administrative Tools** | **Computer Management**.
2. Double-click **Storage** | **Disk Management** in the tree.
   The Write Signature and Upgrade wizard will start if you have new hard drives with no signatures on them.
3. Follow the on-screen instructions to create the signature.
4. Select the available hard disk space on the graphic and use menus to create additional partitions.
5. Format all partitions that are not yet formatted.
6. Close the Computer Management window.

Phase 3 - Adding Windows Terminal Services

1. Click **Start** | **Settings** | **Control Panel** | **Add Remove Programs**.
2. Click **Add/Remove Windows Components**.
3. Locate then select the **Terminal Services** checkbox, then click Next.
4. Select the mode you want to use, then click Next.
   There are two mode options: Remote administration mode and Application server mode.

NOTE: The following instructions are based on the Application server mode. Please note the licensing requirement listed on the screen for this mode. Consult with your Microsoft representative for setting the licensing server.

5. Select the default permissions for application compatibility, then click **Next**.
6. Click **Next** to accept the support tools and administrator tools settings.
7. If prompted, insert the Windows NOS CD-ROM.
8. Click **Finish** to close the wizard.
9. Click **Yes** to reboot the system.
   Be sure to remove the Windows NOS CD-ROM from the drive.
10. After the system reboots, log on to the system.

11. Click **Start** | **Settings** | **Control Panel** | **Administrative Tools**.
12. Check that the following services are now available:
    - Terminal Services Client Creator
    - Terminal Services Configuration
    - Terminal Services Manager

To create the client installation diskettes:

1. Double-click **Terminal Services Client Creator**.
2. Select the appropriate client type for your environment.
3. Click **Format disk** if needed.
4. Check the number of disks required and label them as `Terminal Services for […] Disk [x/y].`
5. Click **OK** to proceed.
6. Follow the on-screen instructions to create the diskette copies.
7. Click **OK** at the [y] floppies were created… screen.
8. Click **Cancel** to close the Create Installation Disks utility.

Section 5. Configuring the network

Phase 1 - Configuring the server's IP address

During the installation process the system was configured to use DHCP. If no DHCP server is found on the network the system will auto-configure a random IP address to start functioning. It is important that you configure the proper IP address to be able to communicate with the clients.

1. Right-click **My Network Places** | **Properties** | **Local Area Connection** on your server.

NOTE: If your ProLiant server hosts several network adapters, the window will show one Local Area Connection icon for each network adapter present in the system. Identify the proper adapter by browsing each one.

2. Click **Internet Protocol (TCP/IP)** | **Properties** | **Use the following IP address**.
3. Enter an appropriate IP address.
4. Click **OK** to continue, and then **OK** again to close the Local Area Connection Properties window.
5. Click **Yes** to restart your server and apply these settings.

Phase 2 - Attaching clients to the network and testing the network link

1. Create a new folder in your server's hard drive and set is as a shared folder (right-click the folder then select **Sharing…**).
2. Create users using the Windows [NOS version] Computer Management utility.

   To open the utility, click **Start** | **Programs** | **Administrative Tools** | **Computer Management** | **System Tools** | **Local Users and Groups** | **Users**.
3. Connect the client PCs to the network your ProLiant server operates on.
4. Open a command prompt window to verify the TCP/IP configuration and enter the command:

   `ipconfig /all`
5. To verify the server and clients can communicate properly:
   - From one of the clients, open a command prompt and type:

     `ping computername`

     where computername is the server name you entered during the Windows NOS installation.

     You should get four replies from your new server. If there is a link problem it must be fixed before going any further.
   - You may test the link further by doing a ping between two clients. In the same command prompt type:

     `ping other_client_IPaddress`

     You should get four replies from the second client.
6. Copy files back and forth from the clients to the server.

To test the network link using Terminal Services:

1. Click **Start** | **Programs** | **Terminal Services Client** | **Terminal Services Client** on a client you installed Terminal Services on.
2. Select the target server from the Available Servers list displayed on the screen.
3. Click **Connect**.
4. Complete the User ID and Password login form.

Phase 3 - Configuring the domain controller setup

The Windows NOS manual calls this process "Promoting the server to a domain controller".

1. Click **Start** | **Programs** | **Administrative Tools** | **Configure Your Server**.
2. Select **Active Directory**.
3. Scroll down and click **Start the Active Directory wizard**.
4. Click **Next** to continue.

NOTE: The following instructions correspond to the standard steps for new domain creation. You may customize the options proposed by your Windows NOS to match your environment.

5. Click **Next** at Domain Controller Type to accept the default setting—**Domain controller for a new domain**.
6. Click **Next** at Create Tree or Child Domain to accept the default setting—**Create a new domain tree**.
7. Click **Next** at Create or Join Forest to accept the default setting—**Create a new forest of domain trees**.
8. In the Full DNS name for new domain text box, type in the assigned DNS name for your server (for example: mycompany.com).
9. Click **Next**.
   The system may take a few minutes before moving to the next screen.
10. Click **Next** at the NetBIOS Domain Name dialog box to accept the default setting—**Domain NetBIOS name**.
11. Click **Next** at Database and Log Locations to accept the default directories.
12. Click **Next** at Shared System Volume to accept the default settings.
    The system will display a dialog box that reads: `"The Wizard can not contact the DNS Server…"`
13. Confirm your DNS configuration, or install and configure a DNS server on this computer.
14. Click **OK**.
15. Click **Next** to accept the installation of DNS on your new server.
16. Click **Next** to accept the default permission value—**Permissions compatible with pre-Windows [NOS version]**.
17. Enter and confirm an administrator password, then click **Next**.
18. Review the Summary display, then click **Next** to continue.
    The system will start configuring the active directory display. It will take a few minutes to complete.
19. If prompted, insert the Windows NOS CD-ROM, then click **OK** to continue.
    The Configuring active directory display shows again.
20. Click **Finish** to close the Wizard utility.
    This completes the active directory installation.
21. Click **Restart Now** to reboot the system.
    Remove the Windows NOS CD-ROM if it is present.
22. In the login prompt:
    a. Type in the administrator password you set.
    b. Click **Options** and verify that the `Log on to: HOST` displays on the dialog box.
    c. Click **OK** to start the login process.
       The This Server is Now a Domain Controller dialog box will display after the login.
23. Click **Finish**.

Section 6. Installing additional HP accessories

The HP ProLiant DL140 Generation 3 Server Support CD includes the drivers for accessories compatible with your server.

Refer to the product manual enclosed with the accessory for the detailed installation procedure and/or to the attached `readme.txt` file associated with the driver. The `readme.txt` file can be found on the appropriate driver diskette.

Installing Red Hat Enterprise Linux NOS

Installation flow

1. Install Red Hat Enterprise Linux 3 [version].

   For particular procedure for each RHEL NOS version, refer to succeeding sections.
2. Install additional HP accessories.

   The HP ProLiant DL140 Generation 3 Server Support CD includes the drivers for accessories compatible with your server.

   Refer to the product manual enclosed with the accessory for the detailed installation procedure and/or to the attached `readme.txt` file associated with the driver. The `readme.txt` file can be found on the appropriate driver diskette.

Pre-installation instructions

1. Complete the pre-NOS installation procedures listed on page 31.
2. Have the following installation requirements on hand:
   - HP ProLiant DL140 Generation 3 Server Support CD
   - Red Hat Enterprise Linux CD-ROMs
     - Red Hat Enterprise Linux 3 – 4 discs
     - Red Hat Enterprise Linux 4 – 4 discs for the x86 edition, 5 discs for the x64 edition
   - A Windows PC that has a:
     - Floppy drive
     - Optical media drive
     - Browser that supports HTML
     - Two or more clients for testing purpose (optional)

Red Hat Enterprise Linux 3 installation

The procedures in this section apply to all versions of the Red Hat Enterprise Linux 3 supported by your ProLiant server. Refer to Table 20 on page 31 for a list of these NOS versions.

Section 1. Launching the Red Hat Enterprise Linux 3 installer

1. Turn on the server and insert the Red Hat Enterprise Linux 3 CD 1.

   The system will display a text menu.
2. Press **Enter** to start the installation.
3. In the CD Found dialog box, click **Skip**.
4. The Welcome to Red Hat Enterprise Linux page displays.
5. Click **OK** to proceed to the customization of your installation.

Section 2. Customizing the installation

Language Selection

Select the language of choice you prefer for the installation, then click **OK** to continue.

Keyboard Selection

Your HP server comes with a generic 104-key PC keyboard.

After selecting the appropriate option for the keyboard layout type, click **OK** to continue.

Mouse Selection

After selecting the appropriate option for the mouse type, click **OK** to continue.

Disk Partitioning Setup

HP recommends selecting the automatic partitioning mode.

1. Click **Autopartition** to continue.
2. Remove all system partitions, then select a hard drive.
3. Click **Next** to continue.
4. If a Warning dialog box appears, click **Yes** to continue.
5. In the Partitioning dialog box, click **OK**.

Boot Loader Configuration

HP recommends selecting the **Use GRUB Boot Loader** option.

1. Select **Use GRUB Boot Loader**, then click **OK**.
2. Review the boot option and modify it if necessary, then click **OK**.
3. If you prefer, set a GRUB password, then click **OK**.
4. Review the Boot Manager setting and modify it if necessary, then click **OK**.
5. Select to install the boot loader in MBR, then click **OK**.

Network Configuration for eth0

Review the IP setting for eth0 and see to it that they fit your environment, then click **OK** to continue.

Network Configuration for eth1

Review the IP setting for eth1 and see to it that they fit your environment, then click **OK** to continue.

Hostname Configuration

Enter a system hostname, then click **OK** to continue.

Firewall

Review the Firewall settings and modify them if necessary, then click **OK** to continue.

Language Support

Review the Language Support setting and modify it if necessary, then click **OK** to continue.

Time Zone Selection

Review the Time Zone Selection setting and modify it if necessary, then click **OK** to continue.

Root Password

Enter a root password consisting of at least six alphanumeric characters, then click **OK** to continue.

Package Defaults

Review the software selection and modify it if necessary, then click **OK** to continue.

Package Group Selection

Review and modify the selection if necessary, then click **OK** to continue.

If you selected the **Custom** install option, pre-determined packages have already been selected. However, depending upon your network environment additional packages may be necessary.

NOTE: Remember to select appropriate package groups that match your network settings (e.g. The DNS Name Server package may be required if you have set up your new server to be the DNS controller.).

Section 3. Installing Red Hat Enterprise Linux 3

Installation to Begin

Once you complete the customization, the installation program asks for confirmation before proceeding with the install. Click **OK** to proceed.

You may be prompted to insert the rest of the RHEL3 CD-ROMs, depending on the packages you have chosen to install.

Video Card Configuration

The video controller for your ProLiant server is integrated in the Server Engines Pilot chipset. Select this option from the list of video hardware, then click **OK** to continue.

Monitor Configuration

The installation program will attempt to detect the monitor being used; otherwise you can find HP monitor references on the back of your monitor. Click **OK** to continue.

X Customization

Select **Text** for the default login option, then click **OK** to continue to the final page. Click **OK** again to complete the installation.

After completing the installation, click **OK** to close the installation program. The system reboots and loads your new Red Hat environment.

Red Hat Enterprise Linux 4 installation

The procedures in this section apply to all versions of the Red Hat Enterprise Linux 4 supported by your ProLiant server. Refer to Table 20 on page 31 for a list of these NOS versions.

Red Hat Enterprise Linux 4, x64 Edition pre-installation setup

The Red Hat Enterprise Linux 4, x64 Edition does not support the 8042 keyboard controller. Users of this Linux version should first disable the related BIOS Setup field before installing the Linux OS. Follow the steps below.

1. Turn on the monitor and the server.
2. During POST, press **F10** to access the BIOS Setup Utility.
3. Press → to display the Advanced menu.
4. Set the 8042 Emulation Support field to **Disabled**.
5. Press **F10** to save the changes you made and close the Setup Utility.
6. Proceed to the Linux OS installation.

Section 1. Launching the Red Hat Enterprise Linux 4 installer

1. Turn on the server and insert the Red Hat Enterprise Linux 4 CD 1.
   The system will display a text menu.
2. Press **Enter** to start the installation.
3. In the CD Found dialog box, click **Skip**.
   The Welcome to Red Hat Enterprise Linux page displays.
4. Click **Next** to proceed through the customization of your installation.

Section 2. Customizing the installation

Language Selection

Select the language of choice you prefer for the installation, then click **Next** to continue.

Keyboard Configuration

Your HP server comes with a generic 104-key PC keyboard.

After selecting the appropriate option for the keyboard layout type, click **Next** to continue.

Disk Partitioning Setup

HP recommends selecting the automatic partitioning mode.

1. Click **Automatically partition** to continue.
2. Remove all system partitions, then select a hard drive.
3. Click **Next** to continue.
4. If a Warning dialog box appears, click **Yes** to continue.
5. In the Partitioning dialog box, click **Next**.
6. Review the Disk Setup settings and modify them if necessary, then click **Next**.

Boot Loader Configuration

HP recommends keeping the default option, then click **Next** to continue.

Network Configuration

Review the Network Configuration settings and see to it that they fit your environment, then click **Next** to continue.

Firewall Configuration

Review the Firewall Configuration settings and modify them if necessary, then click **Next** to continue.

Additional Language Support

Review the Additional Language Support setting and modify it if necessary, then click **Next** to continue.

Time Zone Selection

Review the Time Zone Selection setting and modify it if necessary, then click **Next** to continue.

Set Root Password

Enter a root password consisting of at least six alphanumeric characters, then click **Next** to continue.

Package Defaults

Review the software selection and modify it if necessary, then click **Next** to continue.

Package Group Selection

Review and modify the selection if necessary, then click **Next** to continue.

If you selected the **Custom** install option, pre-determined packages have already been selected. However, depending upon your network environment additional packages may be necessary.

NOTE: Remember to select appropriate package groups that match your network settings (e.g. The DNS Name Server package may be required if you have set up your new server to be the DNS controller.).

Section 3. Installing Red Hat Enterprise Linux 4

About to Install

Once you complete the customization, the installation program asks for confirmation before proceeding with the install.

1. Click **Next** to proceed with the installation.
2. In the Required install media dialog box, click **Continue** to start installation.

You may be prompted to insert the rest of the RHEL4 CD-ROMs, depending on the packages you have chosen to install.

Complete Installation

After completing the installation, click **Reboot** to close the installation program and reboot the system.

Section 4. Configuring the initial setup settings

Once the system reboots, the new Red Hat environment is loaded. You need to configure the initial setup settings.

Welcome

Click **Next** to start the initial setup configuration.

License Agreement

Read the license agreement. If the terms of the agreement are acceptable, click **Next**.

Date and Time

Modify the Date and Time settings, then click **Next** to continue.

Display

Retain the default display setting, then click **Next** to continue.

System User

1. Skip the option to create a new user, then click **Next** to continue.
2. In the Warning dialog box, click **Next** to continue.

Additional CDs

Ignore this page. Click **Next** to continue.

Finish Setup

The initial setup configuration is complete. Click **Next** to proceed to the login window.

Login

Type `root` and the password you've set during the NOS installation, then press **Enter**.

Installing SUSE Linux Enterprise Server NOS

The procedures in this section apply to the SUSE Linux Enterprise Server NOS, version 9 and 10.

Installation flow

1. Install SUSE Linux Enterprise [version].

   For particular procedure for each SLE NOS version, refer to succeeding sections.
2. Install additional HP accessories.

   The HP ProLiant DL140 Generation 3 Server Support CD includes the drivers for accessories compatible with your server.

   Refer to the product manual enclosed with the accessory for the detailed installation procedure and/or to the attached `readme.txt` file associated with the driver. The `readme.txt` file can be found on the appropriate driver diskette.

Pre-installation instructions

1. Complete the pre-NOS installation procedures listed on page 31.
2. Have the following installation requirements on hand:
   - HP ProLiant DL140 Generation 3 Server Support CD
   - SUSE Linux Enterprise Server CD-ROMs
     - SUSE Linux Enterprise Server 9 – 6 discs
     - SUSE Linux Enterprise Server 10 – 4 discs
   - A Windows PC that has a:
     - Floppy drive
     - Optical media drive
     - Browser that supports HTML
   - Two or more clients for testing purpose (optional)

SUSE Linux Enterprise Server 9 installation

Section 1. Installing SUSE Linux Enterprise Server 9

1. Turn on the server and insert the SUSE Linux Enterprise Server 9 (SLES9) SP2 CD 1.
2. Reboot the system to the SLES9 CD 1.
3. Select **Installation**, then press **Enter** to start the installation.
4. Remove the SLES9 SP2 CD1 and insert the SLES9 CD 1 once prompted.
5. Press **Enter** to proceed to the customization of your installation.

Section 2. Customizing the installation

Software License Agreement

Read the license agreement. If the terms of the agreement are acceptable, click **I Agree**.

Language

Select the language of choice you prefer for the installation, then click **Accept** to continue.

Installation Setting

1. Click **New Installation**, then click **OK**.

   The installer will automatically enable the default settings.
2. Review the default installation settings and modify them to meet your network environment.
3. Click **Accept** to initialize the installation process.
4. Click **Yes, install** on the warning dialog box to start the file copy process.

You may be prompted to insert the rest of the SLES9 CD-ROMs, depending on the installation settings you have chosen.

After copying all the necessary files for installation, the system will automatically reboot.

Section 3. Completing the installation

Root Password

Enter a root password consisting of at least six alphanumeric characters, then click **Next** to continue.

Network Configuration

Review the Network Configuration settings and see to it that they fit your environment, then click **Next** to continue.

Test Internet Connect

Skip this test. You can test the network connection after completing the NOS installation. Click **Next** to proceed with the installation.

Service Configuration

Review the Services settings and select those items that are required by your environment, then click **Next** to continue.

User Authentication Method

Select the authentication method appropriate for your environment, then click **Next** to continue.

Add a New Local User

Follow the prompt to add a new local user account, then click **Next** to continue.

Release Note

Review the release notes, then click **Next** to continue.

Hardware Configuration

Review the default hardware settings and modify them if necessary, then click **Next** to continue.

NOTE: Skip the Graphic Cards settings.

Installation Completed

Click **Finish** to proceed to the login window.

SUSE Linux Enterprise Server 10 Installation

SUSE Linux Enterprise Server 10, x64 Edition pre-installation setup

The SuSE Linux Enterprise Server 10, x64 Edition does not support the 8042 keyboard controller. Users of this Linux version should first disable the related BIOS Setup field before installing the Linux OS. Follow the steps below.

1. Turn on the monitor and the server.
2. During POST, press **F10** to access the BIOS Setup Utility.
3. Press → to display the Advanced menu.
4. Set the 8042 Emulation Support field to **Disabled**.
5. Press **F10** to save the changes you made and close the Setup Utility.
6. Proceed to the Linux OS installation.

Section 1. Installing SUSE Linux Enterprise Server 10

1. Turn on the server and insert the SUSE Linux Enterprise Server 10 (SLES10) CD 1.
2. Reboot the system to the SLES10 CD 1.
3. Select **Installation**, then press **Enter** to proceed to the customization of your installation.

Section 2. Customizing the Installation

Language

Select the language of choice you prefer for the installation, then click **Accept** to continue.

Media Check

Skip this stage of the installation. Click **Next** to continue.

License Agreement

Read the license agreement. If the terms of the agreement are acceptable, click **Yes, I agree to the license agreement**, then click **Next** to continue.

Installation Mode

Click **New Installation**, then click **Next** to continue.

Clock and Time Zone

Modify the Clock and Time Zone settings, then click **Next** to continue.

Installation Setting

1. Review the default installation settings and modify them to meet your network environment.
2. Click **Accept** to initialize the installation process.
3. Click **Install** to start the file copy process.

The system will automatically reboot once the first part of the file copying is completed. You may be prompted to insert the rest of the SLES10 CD-ROMs, depending on the packages you have chosen to install.

Section 3. Completing the installation

Hostname and Domain Name

Set host name and domain name, then click **Next** to continue.

Password for the System Administrator

Enter a root password consisting of at least six alphanumeric characters, then click **Next** to continue.

Network Configuration

Review the Network Configuration settings and see to it that they fit your environment, then click **Next** to continue.

Test Internet Connect

Review the Network Configuration settings and see to it that they fit your environment, then click **Next** to continue.

Installation Setting

Review the installation settings once again, then click **Next** to continue.

User Authentication Method

Select the authentication method appropriate for your environment, then click **Next** to continue.

Add a New Local User

Follow the prompt to add a new local user account, then click **Next** to continue.

Release Note

Review the release notes, then click **Next** to continue.

Hardware Configuration

Review the default hardware settings and modify them if necessary, then click **Next** to continue.

Installation Completed

Click **Finish** to reboot the system and proceed to the login window.

Installing Sun Solaris 10

Perform the procedures in this section to install Sun Solaris 10 to your ProLiant server

Pre-installation instructions

1. Complete the pre-NOS installation procedures listed on page 31.
2. Have the following installation requirements on hand:
   - HP ProLiant DL140 Generation 3 Server Support CD
   - Sun Solaris 10 Update 1 DVD

   NOTE: You must first install a DVD-compatible optical media drive in your ProLiant server before installing Sun Solaris 10.

   - A Windows PC that has a:
     - Floppy drive
     - Optical media drive
     - Browser that supports HTML
   - Two or more clients for testing purpose (optional)

Installation flow

1. Install Sun Solaris 10.

   Refer to the next section for detailed instructions.
2. Install additional HP accessories.

   The HP ProLiant DL140 Generation 3 Server Support CD includes the drivers for accessories compatible with your server.

   Refer to the product manual enclosed with the accessory for the detailed installation procedure and/or to the attached `readme.txt` file associated with the driver. The `readme.txt` file can be found on the appropriate driver diskette.

Sun Solaris 10 installation

Section 1. Launching the Sun Solaris 10 installer

1. Turn on the server and insert the Sun Solaris 10 Update 1 (SS10U1) DVD.
2. Reboot the system to the SS10U1 DVD.
3. Click **Solaris**, then press **Enter**.
4. Type `1` to select the Solaris Interactive Installation option.

   After a few minutes, the Proposed Window System Configuration for Installation list appears. These settings are incorrect and should be modified.
5. Press **Esc** to modify the settings and customize the installation.

Section 2. Customizing the installation

The Sun Solaris10 Installer shifts to a text-based screen for customizing the hardware selection and other options. Use the arrow keys to navigate through them and press **F2** to enable a setting.

Kdmconfig – View and Edit Window System Configuration

1. Click **Change Pointing Device**, then press **F2**.
2. Select the pointing device used by your system, then press **F2**.
3. Select **Change Video Device/Monitor**, then press **F2**.
4. Check that the Video Device setting shows `XF86-VESA Matrox Graphics, Inc. Unknown Board`, then press **F2**.
5. Select the display device used by your system, then press **F2**.
   If you are using a 17" CRT monitor, select **MultiFrequency 38 KHz (Up to 1024x768 interlaced)**.
6. Select your display device's screen size, then press **F2**.
7. Set the preferred Resolution/Color/Refresh Rate settings, then press **F2**.
   HP recommends the 1024 x 768 – 65536 colors option.
8. Select **Save and Test the Window System Configuration**, then press **F2**.
9. Press **F2** again to test the hardware configuration settings you've selected.
   If you are able to view the sample display, click **Yes** to return to GUI installation mode. .
   If the hardware test fails, repeat steps 1- 9 until the correct settings are made.

Select Language

Select the language of choice you prefer for the installation, then press **Enter** to continue.

Welcome

The Welcome screen appears. Click **Next** to proceed with the customization.

Network Connectivity

Click **Non-networked**, then click **Next** to continue.

Hostname

Enter a hostname for the system, then click **Next** to continue.

Time Zone

Click **Geographic Continent/Country/Region**, then click **Next** to continue.

Continent and Country

Select the continent and country of your location, then click **Next** to continue.

Date and Time

Set the system date and time. If the default date and time settings displayed are correct, click **Next**. Otherwise, adjust the date and time settings, then click **Next**.

Click **Geographic Continent/Country/Region**, then click **Next** to continue.

Root Password

Enter a root password. Re-enter the password in the second box, then click **Next** to continue.

Confirm Information

A configuration information summary is displayed. Verify that this information is correct, then click **Confirm** to proceed to the installation proper.

Section 3. Completing the installation

Welcome

The Welcome screen appears. Click **Next** to proceed with the installation.

Installation Options

Retain the default installation option settings, then click **Next** to continue.

Specify Media

Click **CD/DVD**, then click **Next** to initialize the installation process.

License

Read the license agreement. If the terms of the agreement are acceptable, select the **Accept** check box, then click **Next** to continue.

Select Type of Install

Click **Custom Install**, then click **Next** to choose the Solaris options you intend to install.

Select Software Localizations

Click a greater than symbol (>) to expand a geographic region option, then select the preferred appropriate localization(s). Click **Next** to continue.

Select System Locale

Select the locale appropriate once the installation is complete, then click **Next** to continue.

Select Products

Select the Solaris software products you needed, then click **Next** to continue.

Additional Products

For the initial installation, no additional Solaris software is required. Click **Next** to continue.

Select Solaris Software Group

Click **Entire Group**, then click **Next** to continue.

Disk Selection

Select a boot disk. If the system contains more than one hard disk, select a disk from the list, then click **Next** to continue.

Select Disks for fdisk Partition Customization

Select a disk for custom partitioning, then click **Next** to continue.

Customize fdisk Partitions – Disk c0d0

Enter the preferred partition size, then click **Next** to continue.

Layout File System

Review the default file system layout and modify it if necessary, then click **Next** to continue.

Ready to Install

An installation information summary is displayed. Verify that these information, then click **Install Now** to start the installation process.

Upon completing the installation, the system will automatically reboot. You can now eject the SS10U1 DVD.

Once the system reboots, the new Sun Solaris environment is loaded. The following message appears:

```
Do you need to override the system's default NFS version 4 domain name?
```

Keep the default setting (**No**), then press **Enter** to proceed to the login window.

Server management

Server management overview

Server management on the HP ProLiant DL140 G3 provides the user with the status of various system sensors, and the ability to manage and control some of the system functionalities remotely. The features and details of these functionalities are covered in the *Lights-Out 100 User Guide*. The information in this chapter is geared towards helping the user configure and use some of the basic server management features of the HP ProLiant DL140 G3.

While a web interface provides the user with many of the basic server management functionalities, a knowledgeable user well versed with IPMI 2.0 specification will have the ability to use some of the advanced functions and system controls, through command line instructions via the CLI and KCS interfaces.

Hardware interface

There are three possible connections that will allow the user to access the server remotely.

- Dedicated NIC – The 10/100 Mbps NIC port on the rear panel is dedicated for server management function.
- Sideband NIC – This hardware option allows the user to connect a Gigabit NIC which can double as a server management connector and a Gigabit NIC port.
- COM port – The serial port on the rear panel can be configured as a standard serial port or as a COM port for BMC functionality. It allows the user to communicate with the system's BMC server management controller.

Server management BIOS setup

The "System BIOS configuration" chapter on page 4 provides the user with information on how to configure the system BIOS to support the various remote management system interfaces.

The default NIC connections should allow the user to access the simple web interface and the CLI command line interface via LAN. The default COM port settings should allow the user to use the advanced features and provide a standard control interface that some existing hardware use. The console redirection settings, in conjunction with matching COM port settings should provide the user with the flexibility of using the HP ProLiant DL140 G3 in various OS environments. The discussions here will be limited to a few standard configurations.

NIC setting

By default, the BMC firmware will obtain the NIC address from the DHCP server. This setting is covered in the IP Address Assignment field of the Advanced | IPMI | LAN Settings submenu on page 16.

Console redirection setting

Enable console redirection in the Advanced | Console Redirection submenu (page 14). Once enabled, the system BIOS will provide additional resources to the COM port that will make the system compatible with certain OS environments that support or depend on legacy BIOS console redirection. Environments that depend on the system BMC for console emulation should not enable this feature.

COM port setting

The Serial Port Mode field on the Advanced | I/O Device Configuration submenu has three possible settings. The default setting (**Shared**) will allow the user to use the BMC for console redirection. If the user needs to use the legacy console redirection, in conjunction with enabling console redirection, the user needs to set the field value to **System**.

Remote management interfaces

The following paragraphs provide examples on how to use the various interfaces. The CLI and KCS interfaces provide the user with advanced management features as specified in the *Lights-Out 100 User Guide*.

Web interface

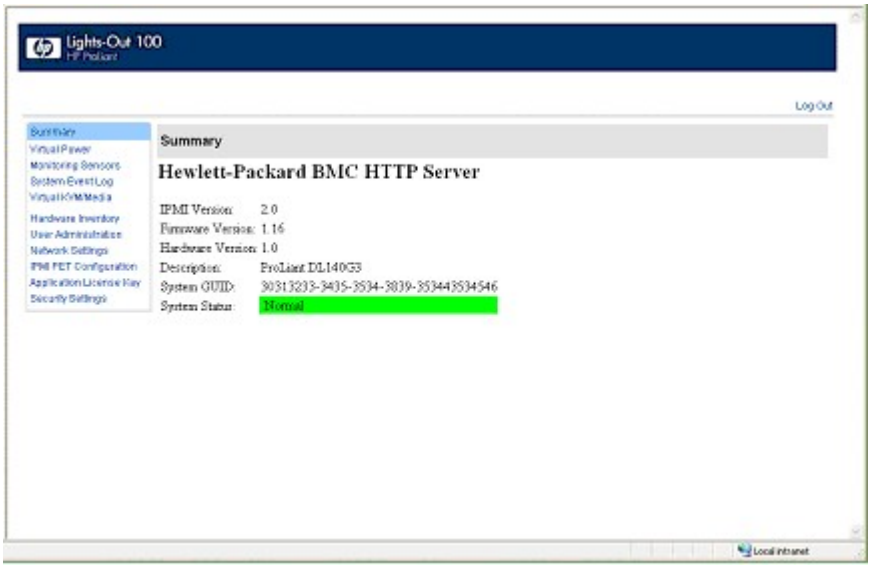
This is a basic interface that allows the user access to the server information. From a web browser, the user needs to type in the IP address of the server.

To access the remote management web interface:

1. Connect a CAT5 Ethernet cable between your DHCP server (or network HUB or switch box) and the system dedicated NIC port.
2. Follow the HP standard procedures for turning on the system.
3. During POST, press **F10** to access the BIOS Setup Utility.
4. Go the Advanced | IPMI | LAN Settings submenu and note the system IP address.
5. Press **F10** to close the Setup Utility and restart the server.
6. Launch your web browser (such as Internet Explorer) and type in the IP address.

   The Lights-Out 100 Summary screen will be displayed.

Figure 25 Lights-Out 100 Summary screen



CLI command line interface

This interface allows the user to access the ProLiant server via the dedicated or the sideband NIC or the COM port.

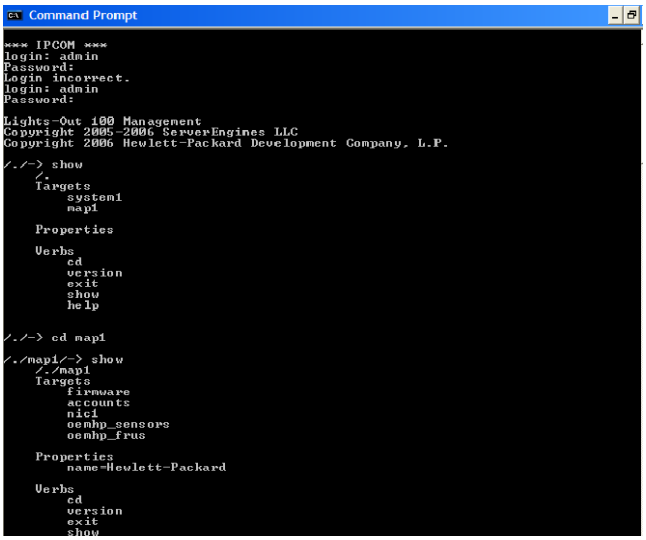
The following sections will enable you to access a TELNET session and use the CLI command line to communicate with the server.

To use the NIC port for CLI interface access:

1. Connect a CAT5 Ethernet cable between your DHCP server (or network HUB or switch box) and the system dedicated NIC port.
2. Follow the HP standard procedures for turning on the system.
3. During POST, press **F10** to access the BIOS Setup Utility.
4. Go the Advanced | IPMI | LAN Settings submenu and note the system IP address.
5. Press **F10** to close the Setup Utility and restart the server.

6. From the remote system open a DOS window and type in `telnet <server's IP address>`.
7. Enter the login name and password.
   The Lights-Out 100 Management screen will be displayed.

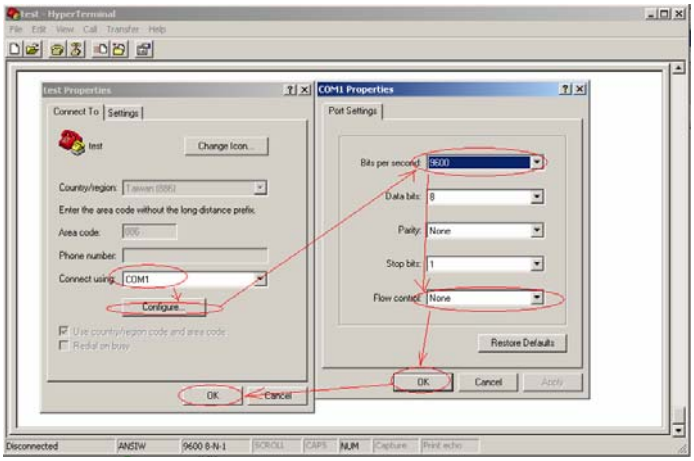
Figure 26 CLI interface screen via a NIC port



To use the COM port for CLI interface access:

1. Connect a peer-to-peer modem cable between the system's COM port and a Windows client PC.
   A client PC running a different OS can also be used as long as it supports HyperTerminal capability.
2. Follow the HP standard procedures for turning on the system.
3. Turn on the client PC and launch the HyperTerminal program.
   The Connection Description dialog box appears.
4. Enter a name and select an icon for the new connection, then click **OK**.
5. Click **File | Properties** to open a new connection Properties window.
6. Configure the COM port as follow.

Figure 27 HyperTerminal COM port configuration



   a. Select **COM1** in the Connect using field.
   b. Click **Configure...**.
   c. Select **9600** in the Bit per second field.
   d. Select **None** in the Flow control field.
   e. Click **OK** to save the port settings.
   f. Click **OK** to apply the new COM port settings.

7. Start connection by clicking the **phone icon** on the HyperTerminal toolbar.
8. Press **Esc** once, then press **Shift + 9**.
   This will switch the COM port mode from System to CLI.
9. Log in to system BMC by entering the user name (`admin`) and password (`admin`).
   To illustrate, to change to map1 directory, type `cd map1` to change directory to *map1*.

```
/./-> cd map1
/./map1/->
```

KCS command line interface

This interface allows the user to access the ProLiant server by booting it into DOS.

To access the KCS command line interface:

1. Follow the HP standard procedures for turning on the system, but in this instance use DOS to boot it.
2. Change directory (CD command) to the directory where the IPMITOOL program or a similar IPMI utility is located.
   The examples below are based on the IPMITOOL program.
3. Run the IPMITOOL and observe the command sequence according to the IPMI specification.
   To illustrate, set the BMC COM port to 01.

```
(Write) ipmitool 20 30 10 04 C0 01
(Return)20 34 10 CE ---> Command Response could not be provided.
Check setting
(Read) ipmitool 20 30 11 04 C0 00 00
(Return)20 34 11 00 11 01 ---> Setting BMC COM port to 01 is OK.
```

   Sensor readings are done through the following:

```
IPMITOOL 20 10 2d xx
CPU sensors
CPU0 Internal Error (Sensor# 0x57)
CPU1 Internal Error (Sensor# 0x58)
CPU0 Thermal Trip (Sensor# 0x55)
CPU1 Thermal Trip (Sensor# 0x56)
CPU0 Prochot (Sensor# 0x59)
CPU1 Prochot (Sensor# 0x5A)
CPU0 Socket Occupied (Sensor# 0x5B)
CPU1 Socket Occupied (Sensor# 0x5C)
CPU0 Thermal Diode (Sensor# 0x46)
CPU1 Thermal Diode (Sensor# 0x47)
CPU0 Fan1-4 (Sensor# 0x31,33,34,35)
Rear Fans (Sensor# 0x32,3C,3D,3E)
CPU0 Vcore Sense (Sensor# 0x3A)
```

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